John Cranford,
M. D.

THE

SEATS and CAUSES

OF

DISEASES

INVESTIGATED BY ANATOMY;

IN FIVE BOOKS,

CONTAINING

A Great Variety of DISSECTIONS, with REMARKS.

TO WHICH ARE ADDED

Very ACCURATE and COPIOUS INDEXES of the PRINCIPAL THINGS and NAMES therein contained.

TRANSLATED from the LATIN of

JOHN BAPTIST MORGAGNI,
Chief Profeſſor of Anatomy, and Preſident of the Univerſity at PADUA,

By BENJAMIN ALEXANDER, M. D.

IN THREE VOLUMES.

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Crawford

TO

DR. RUSSELL.

SIR,

IT gives me a ſecret, and a ſincere, pleaſure, that I have the honour of addreſſing myſelf to You on this occaſion. I have been long wiſhing for an opportunity of diſcharging, in ſome meaſure, the debt of gratitude and reſpect which I owe to Your Character. And I might have waited ſtill longer, for ſuch an opportunity, had not the occaſion before me, which I gladly embrace, preſented itſelf.

Various are the views in which Dr. RUSSEL ſtands intitled tō my eſteem, I mean as the Preceptor, the Phyſician, and the Friend. In each of theſe departments have his Humanity and Capacity been conſpicuous. And to Him, in each of theſe Characters, do I ſtand almoſt equally indebted. From His examples, as a Preceptor, I long had the pleaſure and advantage of receiving the moſt excellent maxims in the Practice of Medicine, and of learning an

accurate Attention to Diſeaſes. And that practical Skill, which I had often been witneſs to in others, I have been happy enough to experience in myſelf. Nor is it without a peculiar pleaſure that I expreſs my gratitude on this head, as well becauſe it is the ONLY TRIBUTE I can be allowed to beſtow, as becauſe the kind offices of Friendſhip went hand-in-hand with the endeavours of the Phyſician.

The Public, then, Sir, will at once be a judge of the propriety of this Addreſs. The Public, which is always grateful itſelf, and reſpects that principle in individuals, will ſee how juſt and indiſpenſable it is to dedicate to You a part of the Labours of that Life, which You have been thus inſtrumental in preſerving. That You may live happily and long, in the exertion of that Medical Skill, for the benefit of your fellow-creatures——and that Your friends may, conſequently, be long indulged with that condeſcenſion, and readineſs to oblige, which I have ſo often experienced at Your hands——are the earneſt wiſhes of

Your ſincere Friend,

And reſpectful humble Servant,

BENJ. ALEXANDER.

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THE

SEATS and CAUSES

OF

DISEASES

INVESTIGATED BY ANATOMY.

BOOK the THIRD,

Which treats of DISORDERS of the BELLY.

LETTER the TWENTY-SEVENTH,

Contains ſome Obſervations on preternatural Hunger, and upon Death from the ſame Cauſe: and afterwards treats of injur'd Deglutition.

1. OF all the four books, into which the Sepulchretum Anatomicum is divided, the third is by far the longeſt, inaſmuch as it comprehends the diſorders of all parts whatever, that relate particularly to the belly, and not only in the male body, but in the female alſo. For which reaſon, I ſhall now take the more pains to ſtudy brevity, as far as I am able; which I am under a neceſſity of doing, if I would, at length, ever put a finiſhing hand to this work, that I have undertaken for you. And there ſeems to me, to be the moſt room for doing this, in thoſe ſeveral ſubjects, which are ſpoken of ſeparately, in the four firſt ſections, "Loſs "of appetite, preternatural hunger, morbid thirſt, and injur'd deglutition." For if you except the laſt, there is not one diſſection, which has been perform'd by Valſalva, or by me, that relates, in particular, to theſe arguments. And leſt you ſhould be ſurpriz'd at this, only conſider, how ſeldom it happens, that any perſon dies, whom a loſt appetite for food, or too great hunger, or thirſt has conſum'd, without ſome violent diſorder being joined with it, or being the conſequence of it. Wherefore, if where I have treated of this violent diſorder, or ſhall treat of it, you find that theſe diſorders are, at the ſame time, taken notice of, what occaſion is there, that thoſe things, which are neceſſarily ſaid, or to be ſaid, in other places, ſhould be needleſsly repeated here? Turn over, I beſeech you, theſe three firſt ſections of the Sepulchretum. You will ſee that a languid appetite, or a deficiency thereof, was generally join'd with great injuries of the viſcera, that is with great diſorders; and that great thirſt was generally join'd with fevers, with inflammations, and with dropſies. For which reaſon Bonetus tells us, that ſome of the ſame obſervations are again produc'd by him, in other places, and even ſome of thoſe, in regard to which he makes no ſuch declaration, are reproduc'd in other places. But this is leſs ſurprizing, than that the ſame obſervations ſhould be again repeated, in one and the ſame ſection. For in the firſt ſection, the third, and fourth, obſervations are no others than thoſe

which are produced in article the ſeventh, under the ninth obſervation, and article the firſt, under the tenth obſervation. Nor in the third ſection, in like manner, are the third, and fourth, obſervations, any other than what are again given, under the fifth obſervation, article the ſeventh and third, as thoſe alſo are one and the ſame, that are found under obſervation the ſeventh, article the ſecond, and in the additamenta, under obſervation the fourth, article the firſt, beſides others which you perhaps will remark.

2. Theſe things, however, I do not ſay of the ſecond ſection. Yet one thing I ſay, that this exceſſive hunger was, alſo, join'd together with ſome conſiderable diſeaſe, as either the various ſymptoms, here and there, in the living patients, or the diſorders in the viſcera of the bodies after death, demonſtrate. Beſides, if you except ſome certain conformations, that are very rare, and thoſe ſuch as were impreſs'd on the very ſtamina of the body, as for inſtance, the pylorus being deficient, or wider, and, at the ſame time, much ſhorter than is natural, and the tube of the inteſtine, being leſs diſtorted into folds, and circles, to which I wonder theſe two other cauſes, that are ſo well known, one of which was found by Ruyſch to be adventitious (*a*), and the other by Dionis to be congenial (*b*), are not added; I ſay, if you except theſe, in moſt other obſervations there will be reaſon to doubt, whether a true, or a falſe, cauſe of unuſual hunger be advanced; as when that cauſe is ſought after in the ſpleen, as if it diſcharg'd ſomething into the ſtomach (*c*), and when it is ſuppoſed to conſiſt in the enlarg'd ſtate of the ſtomach (*d*), which you will ſay, was rather the effect of too great a quantity of food being taken in, than the cauſe, juſt as in the firſt ſection (*e*), you would ſuppoſe, that the very ſmall capacity of the contracted ſtomach, in a man who had eaten nothing for a long time, was the effect of taking in no food for ſo long a time, and by no means the cauſe why the patient could eat nothing. And in regard to the ſpleen, and the magnitude of the ſtomach, you will doubt ſo much the more, by and by, when you have read the appendix after the ſeventh obſervation, and the tenth obſervation itſelf. But will you believe the unuſual magnitude of the liver (*f*), to have been the cauſe of exceſſive hunger, either becauſe it cheriſhed the ſtomach more by its warmth, or becauſe it ſeparated a greater quantity of bile? or rather an effect, becauſe from an encreas'd quantity of nouriſhment, this ſoft viſcus had been much encreas'd in its ſize, juſt as it happens in geeſe that are full-fed? and if you think thus, in regard to the liver, will you not judge nearly the ſame of the pancreas alſo (*g*)? as if truly, becauſe it was furniſh'd with two ducts, which went to the inteſtines in diſtinct places (an appearance that has been, more than once, found in other bodies, and even in thoſe that had not been troubled with a morbid hunger) the viſcus muſt, for that reaſon, ſecrete a much greater quantity of juice, which circumſtance was not to be argued from the number of the ducts, as theſe might be ſmall in proportion, but entirely from the more enlarg'd ſtate of the viſcus, which was, in other reſpects, ſound, if its ſtate was really en-

(*a*) Obſ. anat. chir. 74.
(*b*) Anat. de l'homme demonſtr. 2.
(*c*) Obſ. 4. & ſeq.
(*d*) Obſ. 1. & 8.
(*e*) Obſ. 5.
(*f*) Obſ. 2.
(*g*) Obſ. 13.

larg'd.

larg'd. Finally, to omit other things, ſhould it have been ſaid, that the " pica had ariſen from the ſtomach being almoſt in a ſphacelated ſtate?" certainly not; for this mortal diſpoſition of the ſtomach, as it was in a woman, who was juſt at the point of death, could not, without doubt, have exiſted, at the time " when ſhe was fond of eating cinders and aſhes."

3. But do you approve of nothing, in this whole ſection, you will ſay? yes: I do approve of many things, notwithſtanding I could wiſh, there had been a better choice, in ſome things, and in others, a more nice judgment. There are, alſo, ſtill other caſes, that I cannot admit without ſome heſitation; and others on the contrary, that I am even able to confirm. You ſee, for inſtance, what is ſaid in the ninth obſervation, of ſome lice being devour'd by an icteric boy, ſo that they grew in the ſtomach, to " a monſtrous magnitude, and to a very conſiderable multitude," and brought on " an " inſatiable hunger, by conſuming the aliment" taken in. Do theſe creatures then, like to feed upon the ſame kind of nouriſhment as men? and do they thrive very well therefrom? or is the ſtomach a very proper place for them to live in, ſo that they ſhall neither be overwhelm'd with the liquors taken in, nor carried away to the inteſtines, together with the food in which they are ſo greedily entangled; and is it even a proper place for them to propagate in? In ſhort, if they had really liv'd there, would they not rather have quickly brought on an intolerable eroſion, in a viſcus of this delicate nature, and a ſenſe of eroſion, rather than of hunger? and yet no eroſion is mention'd, as having been ſeen in the dead body. Wherefore, for more than one reaſon, the obſervation that is adjoin'd in the ſcholium, and is given, in another place, under this title (*b*), " A pain of the ſtomach, from bladders full of lice being affix'd to it," may ſeem ſomewhat leſs incredible: although I am much inclin'd to ſuſpect, that in both of the caſes, ſome little bodies, or if you will have it ſo, ſome little animals, were ſeen, which in ſome meaſure reſembled lice, eſpecially as it is clear, that he who relates the ſecond, was not himſelf preſent; and he who related the firſt, has not expreſly ſaid that he was himſelf preſent; and neither of them, whether the lice were at that time ſtill alive, in order to ſhow us from the motion, at leaſt, that they were animalcules. But as I obſerv'd, after I had written theſe things, that the caſe ſeem'd credible, to more than one of my learned friends; I would, for that reaſon, ſo much the more have you remember, that I do not ſay theſe things, as a perſon who abſolutely denies the truth of the facts, but rather as one who doubts thereof. On the other hand, when in the appendix, which is ſubjoin'd to the ſcholia of the obſervation, the queſtion is of worms in the human body, cauſing exceſſive hunger, by their peculiar magnitude, or number, there is no reaſon for heſitation thereon. For theſe creatures live in their proper places, and feed on their natural proviſion: and if their place, and proviſion, be not in proportion to their magnitude, or at leaſt to their multitude, it is evident that the animal, in which theſe worms are, being defrauded of its nouriſhment, muſt be often troubled, with an incredible hunger, and often even with an incredible thirſt. For both of theſe circumſtances have not only been, fre-

(*b*) L. hoc 3. f. 6. obſ. 38.

quently,

quently, obſerv'd by others, but by me alſo, and particularly in that young whelp, which I accurately diſſected, and in which, though it died after being troubled with theſe ſymptoms, I could no where find any morbid appearance beſides a great number of worms, as I have written in the letter, which was formerly publiſh'd by our Valliſneri (*i*). So likewiſe, when the obſervations of Bontius are pointed out (*k*) " of exceſſive hunger, and canine appetite," as it is call'd, being the conſequence of infarctions in the meſentery, they bring to my mind what Albertini had formerly related to me, that he, in ſome bodies, who had labour'd under this kind of diſorder, and particularly in a boy, who was hungry to ſuch a degree, as to be frequently ſeiz'd with ſwoonings from that very cauſe, had found the glands, that lie in the belly, to be tartarizated, as the common phraſe is, ſo as to turn the edge of the knife by their hardneſs. But whether there was an abdominal flux in theſe perſons, and of what kind it was, when the freſh ſupplies of chyle were continually intercepted by the meſentery, or whether there was none at all; for in Bontius (*l*) you will read that there was a lientery; I do not certainly remember.

4. I am alſo pleas'd with thoſe diſſections, that are produc'd in the laſt place (*m*), of two men who were kill'd, by a long abſtinence from meat, and drink, but ſhould have been ſtill more pleas'd, if, as they ſhow " that " the veins, and arteries, were ſurprizingly emptied, and that from the vena " cava, ſcarcely two or three ſpoonfuls of blood flow'd out, and from the " aorta, none at all;" ſo, in like manner, they had ſhown other things, that are worthy of obſervation, as for inſtance, the ages of theſe men, their conſtitution, habit, ſtrength, and the exact number of the days of their abſtinence, the ſymptoms which preceded their death, the ſtate of their viſcera, and other things of this kind. Which accuracy would have been extremely uſeful, in the firſt of theſe men particularly, as he was, " in other reſpects, of a ſound " and healthy body," when he took the reſolution of killing himſelf with hunger. For thoſe who, in conſequence of diſeaſe, or the torture of it, are brought to ſuch a ſtate, as to be able to take no nouriſhment, can teach us nothing certain, either living, or dead, as you are, without doubt, entirely ignorant, how many days this diſeaſe, itſelf, might, perhaps, have taken away from life, and what unuſual appearances, the privation of nouriſhment had, of itſelf, brought upon the viſcera. So in the works of the celebrated Peyerus, I mean the ſon, we have the diſſections of a man, and a woman (*n*), who were ſtarv'd to death with hunger; but in both of them, we read of morbid appearances, of the internal parts, and of ſuch a kind, that when we acknowledge theſe to have related to diſorders, we do not very greatly wiſh for thoſe other informations, which I mention'd juſt now. On the contrary, moſt of theſe circumſtances are accurately taken notice of by the very excellent Fantonus (*o*), in a woman who obſtinately refus'd taking food for fifty days, when ſhe died. But as ſhe did, however, take a little twice, and which is of ſtill more conſequence, made uſe of water by way of drink, although " in very ſmall quantity," ſhe is by no means to be compar'd with

(*i*) Conſideraz. int. alla generaz. de' vermi.
(*k*) Obſ. 12.
(*l*) Vid. Sepulchr. l. 3. ſ. 10. obſ. 1.
(*m*) Obſ. 18. § 1. & 2.
(*n*) Obſ. anat. 1. & 7.
(*o*) Diſſert. anat. renov. 1.

the man, of whom I made mention in the firſt place. For how much the drinking of water, may contribute, by diminiſhing the ſcarcity of the humours, and tempering their acrimony, which are the two things moſt injurious to hungry perſons, to lengthen out their lives, is proved by the experiments of Redi *(p)*, who keeping many capons without any food, obſerv'd that of thoſe to which he, alſo, denied drink, not one of them liv'd beyond the ninth day, whereas that, to which he gave as much water, as he would have, which he drank, very greedily, and frequently, for the firſt ſixteen days, lived more than twenty days. Nor indeed do I believe, although Pomponius Atticus *(q)* ended his life, together with his very violent diſeaſe, within the fifth day of his abſtinence from food, it would firſt have happen'd, " that the fever left him all at once," and the diſeaſe have begun to be more mild, " if he had abſtain'd" from drink alſo, " for the ſpace of " two days," as he had " from food." However, whether that ſhort alleviation of Atticus, is, perhaps, to be explain'd, from the forty-ſeventh aphoriſm of the ſecond ſection, of Hippocrates, as if the pus had then ceas'd to be prepar'd, which afterwards " burſt out by the loins," or whether it is rather to be attributed to his abſtinence from food, ſince Redi *(r)* affirms that it is incredible, how beautiful the viſcera of thoſe animals are found to be, that have died of hunger, you are quite at your own liberty to determine. I will confirm to you another maxim of Redi, in regard to thoſe things which I have above thought deficient in obſervations of this kind, by a certain experiment of Valſalva's. Much, ſays Redi *(s)*, do the age, and ſtrength, of animals contribute to make them bear up the longer under hunger. And the following is the experiment of Valſalva, which is written with the accuracy, and care, that we require.

5. A dog was taken away from his mother's dugs, a little after being whelp'd, and kept from all kind of nouriſhment. On the third day of his hunger, he began to be attack'd with convulſive motions in his whole body, ſometimes more violent, ſometimes more mild. He died on the fourth day. The belly being open'd, the gall-bladder was found to be very full of bile. The thorax being open'd, the lungs, in the right ſide, were ting'd with a very black oblong ſpot: the auricles of the heart were much dilated by coagulated blood: of which the ventricles were alſo full. And in all the ſanguiferous veſſels likewiſe, but particularly in the veins, whatever blood there was, had become coagulated, ſo that it was no where found to be fluid. At length, the cranium being cut through, the cerebrum was found to be ſoft, and flaccid, and not very well diſtinguiſh'd into two ſubſtances, ſo that the cortical part could be known from the medullary. Both the tympana of the ears, being full of a pellucid jelly, had the little bones exactly well-form'd indeed, but, even at that time, preſerving their membranous ſoftneſs.

6. The convulſive motions, which had preceded death, are, in ſome meaſure, like thoſe, that Valſalva had obſerv'd, before the death of that woman *(t)*, who had abſtain'd ſix days from meat, and drink. But thoſe

(p) Oſſervaz. int. agli animali viventi, &c.
(q) Vid. ejus vit. apud Corn. Nep.
(r) Oſſerv. cit.
(s) Ibid.
(t) Epiſt. 17. n. 25.

appearances

appearances that were in the whelp after death, are moſt of them proper rather to the fœtus, than to the animal, who has died of hunger, yet ſome of them are common to both, as the quantity of bile, by reaſon of the gall-bladder not being compreſs'd by the ſtomach, or the neareſt inteſtine, both of which were of courſe flaccid. But, alſo, whatever bile flows down from the liver to the inteſtines, ſo much the more readily appears therein, as it is not hid by a mixture with the food that is taken in. Nor does reaſon only confirm this, but obſervation alſo, as well in almoſt all thoſe animals, which Redi had kill'd by hunger, as we know from the teſtimony of Caldeſi (*u*), as in men who were deſtroyed by abſtinence, which the joint obſervations of Peyerus (*x*), Fantonus (*y*), and Haller (*z*) demonſtrate. It is alſo ſhewn by reaſon, (as by long abſtinence, from all kind of meat and drink, the humours of the body become very acrid, and tend to putrefaction) how eaſily it may happen, that the bodies of thoſe who die of hunger, ſhall ſmell very ſtrongly, as is aſſerted by a very celebrated writer, of the bodies of men, but particularly of dogs: which mark added to others, would certainly be uſeful, not only to thoſe who deſire to know, whether ſome men were carried off more by hunger, or by diſeaſe; but alſo, ſome times, to thoſe, who I ſee doubt whether the dogs on which experiments have been made, have died of theſe experiments, or of hunger. But I will now leave theſe conſiderations, to thoſe who ſhall hereafter make the experiments, and paſs over other things alſo, to inſiſt upon that which I promiſed you. How long the dogs lived, which Redi (*a*) had thus kept, from all kind of meat and drink, you will underſtand from hence, that ſome of them reach'd to thirty-four days, others to thirty-ſix, and that a little whelp ſeemed likely to live for many more days, if he had not thrown himſelf headlong from a very high window. But although this was in fact a ſmall whelp, he nevertheleſs was not juſt born, as that was which, according to the obſervation of Valſalva, could not live over the fourth day. Indeed, that there may be wonderful varieties in theſe things, I the more readily confeſs, the more I attend to the great number of different inſtances of long abſtinence, which are both learnedly produc'd, and accurately conſider'd, by that very learned man Beccarius (*b*.) Nevertheleſs I ſhould ſuppoſe, that what is deliver'd down by Hippocrates (*c*) pretty well agrees with truth, if you except ſome very rare conſtitutions of bodies, and circumſtances of caſes, I mean that "young perſons" bear faſting "with leſs eaſe, and children leaſt of all," which, on the contrary, they bear more eaſily, who "are middle-ag'd, and "old men the moſt eaſily of all," unleſs, perhaps, they are quite decrepid with age, as Celſus wiſely (*d*) interprets Hippocrates, by giving his opinion in the following manner: "men of a middle age bear abſtinence very eaſily, "but young men not ſo well, and children, and men very far advanc'd in "years, cannot bear it at all;—but that perſon is moſt of all under ne-

(*u*) Oſſervaz. int. alle Tartarughe.
(*x*) Obſ. 7. cit. ſupra ad n. 4.
(*y*) Diſſ. ibid. cit.
(*z*) Ad Boerh. Prælect. § 98. not. 2. & opuſc. Pathol. obſ. 24.
(*a*) Oſſervaz. cit. ſupra ad n. 4.
(*b*) Vid. de Bonon. Sc. Acad. t. 2. p. 1. inter Medica.
(*c*) Sect 2. aph. 13.
(*d*) De Medic. l. 1. c. 3.

"ceſſity

" ceſſity of taking food, whoſe growth is moſt advancing:" which Hippocrates, alſo, had expreſly taught, in the next aphoriſm *(e)*.

7. And the opinion of Hippocrates would be ſurprizingly well confirm'd by one ſtory, if this were really, as Cardan *(f)*, and Zambeccarius *(g)*, have haſtily ſuppos'd, a hiſtory, and not a poetical figment of Dante *(h)*, of the count Hugolini, and his four ſons, who were ſtarved to death with hunger (which one fact is undoubted), ſo that all of them lived ſome days, but the boy, of three years, died on the fourth day, and the other children, who were ſomewhat older, or almoſt young men, on the fifth, or the ſixth day, and laſt of all, the father, as he was of a middle age, or at leaſt only juſt entering upon old age, died on the eighth day: all which circumſtances were, without doubt, imagin'd by the poet himſelf, in conformity to the aphoriſm of Hippocrates, the author being at that time very learned, or at leaſt in conformity to probability, as the poet himſelf, ſufficiently ſhews in that place, though theſe worthy men have not attended to it, where he introduces the ſpirit of Hugolini relating theſe things to him, which, as he expreſly ſays, " he could not have been informed of " by any other means, inaſmuch as they had happen'd in the dark receſſes of a high tower, the keys of which were thrown into the river by the enemy, immediately after they had been ſhut up therein.

If therefore you happen to want a number of hiſtories, to prove the ſeveral parts of the aphoriſm of Hippocrates, as they are explained by Celſus, I will take notice of ſome from the Roman hiſtory, which come into my mind, as I am writing. I have ſaid above *(i)*, that Pomponius Atticus, being ſick, died on the fifth day of his abſtaining from food. But Sextius Baculus, as you have it in Cæſar's Commentaries *(k)*, although he was ſo far ſick, " as to have been without food for " five days," was ſo far from death as to take up arms and repel the enemy, inaſmuch as he was at ſuch a flouriſhing time of life, as, not long before, to have perform'd the office of firſt centurion, to the legionary ſoldiers; but Atticus had compleated his ſeventy-ſeventh year: ſo we muſt not be ſurpriz'd, that Suetonius *(l)*, when he ſpoke of Tiberius having " abſtain'd " from food, for the ſpace of four days," did not only not add what injury he receiv'd therefrom; but even aſſerted, that Tiberius " immediately went " down to Oſtia"; for Tiberius was at that time of a middle age, and a firm conſtitution.

To theſe, you will, yourſelf, add examples of younger perſons: nor will you eaſily find, I believe, when you come to children, and infants, any who have born faſtings of this kind, in ſuch a manner. Nor indeed would I have you object to me, from the obſervation of Fernelius *(m)*, the inſtance of a fœtus who ſeems, as a really memorable example, to have born a want of nouriſhment for the ſpace of two months. For notwithſtanding the mother, who " in the opinion of all thoſe that attended her, had " ſwallowed down no meat, nor drink, for the whole two months," at length, in the latter end of the fever, of which ſhe died, " brought forth a

(*e*) 14.
(*f*) Com. in cit. Aph. 13.
(*g*) Experim. circa diverſa e viventib. exſecta.
(*h*) Infern. cant. 33.
(*i*) N. 4.
(*k*) De Bell. Gall. l. 6. c. 38.
(*l*) De duodecim Cæſarib. l. 3. c. 10.
(*m*) Pathol. l. 6. c. 1. in fin.

" child that ſhe left ſurviving;" yet as often as ever ſhe got down food, or drink, quite to the lower part of the œſophagus, which ſhe immediately brought back, and threw up, it is to be ſuppos'd, that ſome portion of the ingeſta, which were going backwards and forwards, had always entered the mouths of the abſorbent veſſels, in the mouth, the fauces, and the œſophagus, and that by theſe means, this woman was preſerv'd for ſo long a time, nearly in the ſame manner as another gravid woman mention'd by Hildanus *(n)*, who was kept alive, for the ſpace of ſix weeks together, with her fœtus, by nouriſhing glyſters alone. And, indeed, it is not abſurd to ſuppoſe, that the tubercle with which the mouth of the ſtomach was ſhut up, as appeared in her body after death, had not been ſo large while ſhe was living, as quite to obſtruct that orifice, unleſs, perhaps, in the latter part of her life; for diſorders of this kind are continually increaſing, and conſequently extend themſelves to ſuch a degree, as to reach thoſe parts, that they did not, ſometime before, reach.

8. This obſervation of Fernelius brings to my mind the fourth ſection of the Sepulchretum, in which even this very obſervation is *(o)*, of which ſection I made ſuch mention in the beginning *(p)*, as to diſcover, that I was not wanting in obſervations relative thereto, or in other words, to impeded deglutition. And certainly, I ſhould not be at all deficient, if I thought proper to imitate what is done, even in this ſection. For you will ſee, that the fourth obſervation in it, differs from the ſeventeenth, only by being related in ſomewhat fewer words: and you will wonder ſtill more, at the ſame thing taking place in the nineteenth, if compar'd with that to which it is immediately ſubjoin'd, I mean the eighteenth. And in the additamenta themſelves, does not one part of the ſecond obſervation repeat, in ſo many words, what had been already given, with ſufficient fullneſs, in the ſame ſection, in a part of the ſcholium to the eighth obſervation? I however ſhall not repeat here, even thoſe which I have produc'd in other letters, from Valſalva's obſervation, or my own. But whatever of this kind remains, I will give you here; thoſe others I ſhall but juſt make references to. And two hiſtories do remain from the papers of Valſalva. The firſt of theſe is as follows.

9. A man of fifty years of age, began to complain of his deglutition being impeded. The impediment was by degrees encreas'd: his voice was loſt: he had a conſiderable pain in ſwallowing: a portion of the food remained in his fauces, which ſometimes return'd after that, by degrees, into his mouth, ſeemingly corrupted: his body became emaciated: nothing preternatural was to be ſeen externally; only the left internal maxillary gland was perceiv'd to be indurated. He died ſuddenly ſuffocated as it were.

The gland juſt now mention'd, as being indurated, had at the ſide of it, a matter like the white of an egg. And many tumours were ſeen in the pharynx, and at the upper part of the larynx, which were of a cancerous nature.

10. A young man, likewiſe, who died almoſt in the ſame manner, after very ſimilar ſymptoms of diſeaſe, diſcover'd tumours of the ſame nature, particularly at the upper part of the larynx, and the neighbouring ſides

(*n*) Cent. 4. obſ. 30. (*o*) Obſ. 21. (*p*) N. 1.

of

of the pharynx. But the tumours, in ſome places, were already ulcerated: and an ulcer had perforated the epiglottis itſelf.

11. As to what relates to the ſudden death of both theſe perſons, you may from hence confirm what I have before ſaid *(q)* Valſalva had told me, I mean that he had twice ſeen a death of this kind, from a violent diſorder of the larynx, at which time he perhaps had theſe two caſes in his eye. The ſame was alſo obſerv'd by me, in a virgin, of whom I took notice in the ſame place, and perhaps, alſo, in a very excellent ſinger, who was troubled with a very manifeſt ulcer in the fauces, which caus'd a great difficulty in ſwallowing. But as it was not poſſible to determine, in the living body, to what parts this ulcer extended itſelf, nor yet permitted to examine it after death, I therefore did not lay down the thing as certain, and well enquir'd into, eſpecially as ulcers of that kind, ſometimes do not reach to thoſe parts you would ſuppoſe them to reach, and reach to others that you would not have ſuppoſed. And this will be clearly ſhown, by the caſe of a man, who was ſnatch'd away by the ſame kind of death: which caſe, although I have partly hinted at it in the Epiſtolæ Anatomicæ *(r)*, and partly in a letter which I have before ſent to you *(s)*, yet I have no where given at large, but purpoſely defer'd it to the preſent occaſion, as relating to impeded deglutition.

12. There was a man in whom, as he ſwallow'd, part of what he drank return'd by his noſtrils. The bony palate of the man was quite ſound; but the palatum molle, together with the uvula, had been conſum'd by an ulcer that was not recent, and which, as far as could be diſtinguiſh'd by the eye, was already brought to a cicatrix; but where the eye could not reach, it continued even then, as the matter, which was thrown up by ſpitting, demonſtrated. This join'd to a cough, that was ſometimes troubleſome, and other ſymptoms of a ſimilar kind, although ſlight and ambiguous, created a ſuſpicion of an ulcer extending itſelf downwards. And this ſuſpicion was encreas'd, by the patient dying ſuddenly, as if ſuffocated.

Nevertheleſs, the inferior part of the pharynx, and the larynx which lies within it, and the canal of the aſpera arteria, that lies below the larynx, were altogether uninjur'd: although the left lobe of the lungs, at the upper part, which was hard to the touch, was found, when I cut into it, to be exceedingly corrupted, to a very conſiderable extent. But the ulcer had extended itſelf to the higher parts of the pharynx, and to the poſterior foramina of the noſtrils, and there continued. As to the other parts, when the belly was open'd, I found the liver, the inteſtines in ſome places, and the internal muſcles of the abdomen, livid, as if from foregoing inflammation, and ſmelling very ſtrongly.

13. Where, and at what time, I diſſected this body, you will find in thoſe epiſtles, to which I juſt now referr'd (*t*), and in the ſame place, and alſo in the twenty-ſecond of theſe letters to you (*u*), you will ſee what I hinted in regard to the origin, and cauſes of that diſorder, of the lungs. But for what relates to the cauſes, and manner, in which deglutition was injur'd, in this man, or in the two diſſected by Valſalva, that I have given you the

(*q*) Epiſt. 22. n. 25.
(*r*) Epiſt. 9. n. 9. & 10.
(*s*) Epiſt. 19. n. 50.
(*t*) N. 11.
(*u*) N. 26.

hiſtories of, they are ſo evident to any one, not ignorant of the motions of the whole pharynx, and larynx, that are neceſſary for the performance of deglutition, that there is not the leaſt occaſion to explain them. To theſe belong ſeventeen obſervations, in this fourth ſection of the Sepulchretum, which are in two appendixes, that are ſubjoin'd to the twentieth obſervation. And although when I have, frequently, found, as I have already ſaid, the cartilages of the larynx become bony, in old men (*x*), the epiglottis was never yet found to be bony by me, I do not, however, doubt but it may ſometimes, become leſs flexible, and yielding: which is a circumſtance that ſeems to be more prejudicial to the ſwallowing of food, than of drink. For the liquors that we drink, when they have reach'd as far as the epiglottis, flow down on one ſide, and on the other, where there is a kind of ſulcus at the ſides of the larynx, and ſlip down to the lower part of the larynx: nor does it then happen that they enter the larynx, unleſs they either flow back, in too great a quantity, from the ſulci, or theſe ſulci, by inflammation, and a tumid ſtate of the parts, are deſtroy'd, or a kind of convulſion excited, by irritation, or any of the muſcles, that, by reaſon of being affected with a paralyſis, is unequal to its office, diſturb the eaſy flowing down of the liquors: the latter of which I have obſerv'd, in a woman of princely rank, after an attack of the epileptic kind, and the former, in a noble Count, whoſe very troubleſome diſorder I have already deſcrib'd to you (*y*), and which was, in part, ſimilar to a convulſive, but very ſhort, angina.

I would not here have you ſuppoſe, that the conſideration of the epiglottis is ſuperfluous, when the queſtion is of impeded deglutition, becauſe Targioni (*z*) lit on the body of a man, in whom, although the epiglottis was entirely deficient, perhaps from having been formerly deſtroy'd by an ulcer, the power of ſpeaking, and of ſwallowing, without any difficulty, were not wanting, or at leaſt, in the laſt acute diſorder of which he died. For although the arytænoid muſcles, which were in him much thicker, and ſtronger, than they in general are; might have been able to ſhut up the glottis ſo exactly, as by way of an unuſual inſtance in the human body, to ſupply the office of the epiglottis, as other parts have ſupplied the office of the uvula, ſometimes, and ſometimes of the tongue, when originally deficient, or from diſeaſe (*a*), or whether accurate obſervations, and examinations, might, while he was living, have ſhown other things; we ought certainly to take care, in conſideration of what happens naturally in the greater part of mankind, and not of what happens by way of prodigy in any one, not to run into ſuch abſurdities, as to ſuppoſe the epiglottis almoſt uſeleſs, as it were, in deglutition.

I am not ignorant, that there are, at this time, celebrated men, to whom it ſeems that deglutition may be explained ſo differently, from the manner in which others explain it, that if you are of their opinion, you will not want that explication which I hinted at juſt now, of the difference there is betwixt fluids, and ſolids, in paſſing from the mouth into

(*x*) Adverſ. 1. 2. 23.
(*y*) Epiſt. 14. n. 37.
(*z*) Prima Raccolta di oſſer. med. verſo il fine.
(*a*) Ephem. n. c. Dec. 3. A. 9. obſ. 212. & Slevogt. diſſ. de Gurgul. §. 61. 63.

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the ſauces. I confeſs it is not, at preſent, either a proper place, or time, to conſider the whole of their opinion, as the importance of it requires, yet I will, at leaſt, venture to ſay, that there is in this opinion, more than one thing, which I can by no means admit.

Nor does it eſcape me, that there is a remark made by Paul Barbette, that is alſo to be read here in the Sepulchretum (*b*), which by no means agrees with that explication I have given you above. But if there was, at the ſame time, "an abolition of ſpeech," there muſt have been other diſorders, beſides a rigidity of the epiglottis, "not ſufficiently ſhutting up" the larynx, in the paſſage of liquors, or "an induration" of it, to which one circumſtance Paulus attributes all the ſymptoms. But what part was affected with diſeaſe, beſides the epiglottis, in another certain obſervation, in which I read that the deglutition "both of ſolids, and fluids," was impeded, I ſhould perhaps be able to conjecture, if I underſtood what appearances were found in the body after death. And the following appearance is ſaid to be found; "the epi-"glottis, by means of a catarrhous ſpaſm, was ſo drawn up, towards the "oriſice of the œſophagus, that the orifice of the aſpera arteria remained "quite open, and neither fluids, nor ſolids, could be taken down, for fear "of ſuffocation." But I cannot poſſibly conceive, how the orifice of the larynx could be quite open, while the epiglottis was drawn up in ſuch a manner, as this orifice ſhould have been, in that caſe, quite cover'd. And in this manner I ſhould be ready to ſuppoſe it was written by the author, and ill-copied, which is eaſily done by ſubſtituting *apertum* inſtead of *opertum*, only that the patient would then have been under a neceſſity of thinking how to breathe merely, inſtead of thinking how to ſwallow.

14. But, to return to the obſervation of Paulus given in the Sepulchretum; as to the attempt in the ſcholium, which is immediately added, to explain that impediment of deglutition, by "a convulſion of the muſculi hyoidæi, be-"cauſe the larynx is then drawn upwards;" the explanation ought to have been more ſtrict, and expreſs, eſpecially as the muſcles, which may be ſignified by that name, are many in number, and ſome of them perform offices directly oppoſite to each other. Nor yet is it to be doubted, that not only the os hyoides, and larynx, but even the parts that belong to them, if they are by any means conſiderably affected, may cauſe an impediment to deglutition. For you will call to mind, that this had happen'd from the upper appendages of that bone being luxated, as is related by Valſalva (*c*), and, in like manner, from the cartilages of the larynx being luxated, as Boerhaave (*d*) writes, from the obſervation of Cowper, the thyroid, I ſuppoſe, being remov'd from the cricoid; for the book, in which Cowper gives you this caſe, I have not in my poſſeſſion; and whether thoſe things which you may read of, in the acts of the Cæſarean academy (*e*), are referable to the ſame claſs, you will judge; the method of cure, at leaſt, comes pretty near to that of Valſalva.

But in regard to the convulſion, or paralyſis, of the muſcles, even of the œſophagus itſelf, it is to very little purpoſe to ſay any thing, ſince

(*b*) Obſ. 6.
(*c*) De aure hum. c. 2. n. 20.
(*d*) Prælect. ad Inſtit. §. 806.
(*e*) Tom. 6. obſ. 50.

examples of the former are very often to be met with, in hyſterical patients, and obſervations of the latter, though more rare indeed, are not wanting, notwithſtanding it is a diſeaſe, like other paralytic affections, of much longer continuance, and more obſtinate, than the firſt, ſo that the patients have, for this reaſon, either been deſtroy'd by hunger, as you may ſee in Willis (*f*), Helwich (*g*), and others, or ſometimes by means of aliments being thruſt down into the ſtomach, by the help of a chirurgical inſtrument, have been kept alive, for twelve, or fourteen months, and at other times, even for ſixteen years, the latter of which kind of caſes the ſame author, Willis, has in his Pharmaceut. Ration. (in the firſt part indeed, but in the ſecond ſection, and in the firſt chapter, not as it is ſaid in the Sepulchretum (*h*), ſection the third, chapter the third), and the former, nature at length having overcome the diſorder, Job Baſterus, in the year 1682, communicated to Stalpart (*i*), and the ſame author, being a lively old man, in the year 1744, which is a remarkable inſtance, communicated it to the Cæſarean academy (*k*). And Rammazini (*l*) ſaw a paralyſis, of a ſhorter continuance than that indeed, overcome, without the intruſion of this inſtrument, into the œſophagus, which is a very troubleſome operation, as he ſaved a female patient without the leaſt food, or drink, for threeſcore and ſix days, by the means of nouriſhing glyſters, a longer, and more uſeful, practiſe of which, I do not remember ever to have read; and this is a kind of remedy, which, as it is always eaſy, and always innocent, ought never to be neglected by the phyſicians, in every ſpecies of impeded deglutition, and not only in that from a paralyſis of the muſcles.

Moreover, you will, I ſuppoſe, think with me, that the caſe which you read, related by the celebrated Heiſter, in a certain diſſertation of John Charles Spies (*m*), is to be refer'd to a kind of ſlight paralyſis. This caſe is of a nobleman, and one who was already old, and had, for a long time, been affected in ſuch a manner, that though he could ſwallow every thing very well but his laſt bolus, he could not, however, ſwallow that, which, for this reaſon, frequently remained in his fauces, from one meal to another, till it was, at length, puſh'd down in the following meal, unleſs it had happen'd to be previouſly thrown up, by the help of ſpitting, or ſome ſlight cough. And I made no doubt but this circumſtance happen'd much in the ſame manner, as in men pretty far advanc'd in years, all the urine is expell'd from the bladder, one part urging another, till it comes to the laſt drops, which the weaken'd power of the muſcles is, now, not able entirely to expel, as they had been us'd to do at a more flouriſhing time of life. So likewiſe, in this man the former boluſſes were puſh'd forwards by the weight of the following ones, till the laſt being without that aſſiſtance, and not being ſufficiently help'd on by the muſcles of the pharynx, was under a neceſſity of remaining, where it had been already thruſt.

15. But as this, and moſt of the diſorders of which I have hitherto ſpoken, related to the pharynx, and the parts that lie neareſt to it, ſo others

(*f*) Pharm. rat. p. 1. ſ. 1. c. 2.
(*g*) Eph. n. c. cent. 1. & 2. obſ. 147.
(*h*) Sect. hac 4. in addit. obſ. 2. in fin.
(*i*) Cent. poſt. p. 1. obſ. 27.
(*k*) Act. t. 8. obſ. 21.
(*l*) Conſt. epidem. a. 1691. n. 22.
(*m*) De Degl. c. 2. n. 9.

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are alſo to be met with, which relate to the œſophagus itſelf, and the parts that lie thereabout. As to convulſion, and paralyſis, there is no occaſion to ſay any thing more upon theſe heads. But there are two other diſorders, which are, in like manner, contrary to each other, that may be the cauſes of difficult deglutition, I mean the dryneſs of the glands of the œſophagus (*n*), and their œdematous turgeſcency (*o*). Beſides, the gula is ſometimes ulcerated: a remarkable inſtance of which you have in the Sepulchretum (*p*). And although an ulcer of itſelf, if it be painful, or at leaſt if it be large, and have prominent lips, one of which kind was ſeen by Brunnerus (*q*), whom you muſt turn to on this occaſion, impedes the uſe of deglutition; yet if there be none of theſe circumſtances, and the ulcer itſelf begins to be inclin'd to a healing ſtate, or is even already in part healed; it may frequently happen, that ſome conſequences of the ulcer may remain, and obſtruct deglutition, as a caruncle, callus, narrowneſs, or, in fine, coalition, which is taken notice of by Franciſcus Sylvius (*r*).

And the caruncle at the termination of the gula, ſeems to have been formerly hinted at by Galen (*s*), when he ſaid "it ſometimes happens, that even ſomething fleſhy (ſuch as we often ſee externally) is "generated in the ſtomach, which either entirely obſtructs the paſſage of "the aliments, or, at leaſt, hinders it in ſome meaſure." And here, in the Sepulchretum (*t*), you certainly ſee that a caruncle is taken notice of, which aroſe from an ulcer of the œſophagus, that was heal'd up. And notwithſtanding all calli, of the gullet, are not to be accounted for from ulcers, as, for inſtance, where you read in Cælius (*u*), of the "beginning, and upper part, of the ſtomach, being callous," nor yet all narrowneſs, or contraction, as that which is related in this ſection (*x*), to have happen'd after an ardent fever, unleſs you will ſuppoſe, that, in this caſe, there were aphthæ, or internal puſtules (*y*); yet where an ulcer has preceded, or, in part, yet remains, as in a ſoldier (*z*), who found great difficulty in ſwallowing, but not the leaſt pain, we muſt attribute "the coarctation, and calloſity," of the œſophagus, to the eroſion, which was found at the ſame time, being not entirely remov'd, all round. Nor is it to be doubted, but the ſame cauſe that brings on contraction, or narrowneſs, may alſo produce coalition, under which name, I here underſtand, with the learned Mauchart (*a*), that coarctation, which leaves no paſſage at all, or ſcarcely any. And indeed, the coalition which he ſaw (*b*), of a callous nature, and ſcarcely admitting a ſlender probe, was not without a purulent ichor. Nevertheleſs, a coalition does ſometimes happen, from other cauſes alſo (as that perhaps did in ſome meaſure) many of which I ſhall take notice of below (*c*), and ſome of them relate to tumours generated in the very coats of the œſophagus, obſervations of which kind are given us in this

(*n*) Eph. n. c. cent. 1. append. n. 10. obſ. 162.
(*o*) Earund. cent. 5. obſ. 59. ubi I.M. Hoffman. & Benedict. Sylvaric. citantur.
(*p*) In addit. ad hanc ſect. obſ. 1.
(*q*) Gland. Duoden. c. 10.
(*r*) Prax. med. l. 1. c. 5.
(*s*) De ſympt. cauſ. l. 3. c. 2.
(*t*) Obſ. 21.
(*u*) Morb. chron. l. 3. c. 2.
(*x*) Obſ. 14.
(*y*) Vid. act Hafn. t. 1. obſ. 109. & Eph. n. c. dec. 2. a. 9. obſ. 45.
(*z*) Commerc. litter. a. 1741. hebd. 25. n. 1.
(*a*) Diſſ. de ſtruma æſoph. §. 18. 22.
(*b*) §. 11.
(*c*) N. 16.

ſection of the Sepulchretum (*d*), and another, which well deſerves reading, is added by the celebrated Widmann (*e*). But that ſpecies of coalition, which is brought about by means of a cartilage, merits our attention above all others, three inſtances of which are produc'd in the Sepulchretum (*f*): and to theſe, you will particularly add two others, one of which is accurately deſcrib'd by our Valliſneri (*g*), and the other is moreover illuſtrated in a very learned diſſertation, by the celebrated Trillerus (*h*).

There are ſome very eminent men, to whom, that diſorder "ſeems to ariſe "from the drinking of hot water," a cuſtom ſo frequent in this age, which I do not altogether deny. But I wonder, nevertheleſs, as even the ancients or at leaſt as the Chineſe, who are very tenacious of their cuſtoms, have made uſe of hot liquors, for ſo long a time, and do ſtill uſe them, that there have not been formerly found, and are not at preſent found, among them, ſuch as labour under an impeded, or injur'd, deglutition; and it is even not often, or rather it is ſo very ſeldom, that the œſophagus is found to be cartilaginous amongſt us, that I do not remember who has ever met with this appearance, in Italy, beſides Valliſneri, and even he found it in ſuch a man, in ſuch a place, and at ſuch a time, that it does not ſeem poſſible to account for it, from the abuſe of coffee, or tea: and I do not mention that Trillerus, in his caſe, had accounted for it from quite an oppoſite cauſe (*i*).

Be this as it will, I mention'd coalition by means of a cartilage, becauſe here alſo I obſerve the œſophagus, if not to be entirely ſtop'd up by a cartilage, as in the obſervation of Stoffelius (*k*), at leaſt to be ſo far obſtructed in the other inſtances, that only a very ſmall foramen remain'd. But what if the cartilage did not protuberate outwards; but left the paſſage open to its natural ſize? do you think that the faculty of deglutition would be unhurt? that very experienc'd phyſician, Victorius Gornia, communicated to me a diſſection made in Germany, of the body of a moſt high, and mighty prince, whoſe œſophagus was externally membranous, but internally cartilaginous, and towards the ſtomach bony, to the extent of an inch. Yet this prince had not only, for the laſt two years of his life, vomited every day at the interval of two hours after dinner; but had even never complained of any uneaſineſs, or difficulty, in ſwallowing. Does it not follow then, that the food, alſo, may be driven on by the ſtronger muſcles of the pharynx, through the gula, when not collaps'd in its parietes, nor ſtanding in need of dilatation, but perpetually kept open by the rigidity of its ſides, in the very ſame manner as the blood is propell'd through a bony artery, by the force of the heart, and the arteries which lie behind it?

You, therefore, will conſider of this, and at the ſame time adding the laſt obſervation, to the five I mention'd above, you will again conſider with yourſelf, whether it ſeems proper, to attribute to the abuſe of hot water, that diſorder, which, as is demonſtrated by four out of theſe ſix examples, did not occupy the tongue, the fauces, or the upper tract of the gullet, but chiefly the lower part of this tube. And of the other two, one deſcribes the diſorder, as be-

(*d*) Obſ. 22. §. 1. & in addit. obſ. 2.
(*e*) Act. n. c. t. 6. obſ. 149.
(*f*) Obſ. 8. 9. 20.
(*g*) Opere, t. 3. oſſerv. 36.
(*h*) De ſame lethali ex calloſa oris ventric. anguſtia.
(*i*) Ibid. §. 42.
(*k*) 20. hic in Sepulch.

ginning

ginning from the region of the clavicles; ſo that there is one, in which the beginning of the œſophagus is ſaid to be ſhut up by a cartilage, together with the termination of the pharynx: and for this reaſon Stoffelius enquir'd, which others would not even have thought of, whether we might not make uſe of pharyngotomy, in imitation of the operation that they call laryngotomy, or rather, whether an inciſion might not be made into the upper part of the œſophagus, through which a pipe, carrying in nouriſhment, might be convey'd, by prefering an uncertain remedy, as he ſays, to a certain death; but at the ſame time, which is to be lamented, a very difficult and dangerous operation, as all muſt readily conceive, who compare the deep ſituation of the upper part of the œſophagus, with that of the aſpera arteria, which lies quite at hand, and is almoſt ſuperficial, eſpecially as it is attended with ſo many muſcles, nerves, and conſiderable veſſels.

16. And that the parts, lying near to the œſophagus, may impede deglutition, in more ways than one, is ſhown even by thoſe obſervations, which, as I have written them to you in other places, it will be ſufficient here to point out, in purſuance of my promiſe. For theſe parts can not only be injurious, by making ſuch a compreſſion as to obſtruct the paſſage, in the manner of that tumefied gland, in a woman of eighty years of age (*l*), or of the great artery, when dilated in the trumpeter (*m*), or as even both of them together, in a man diſſected by Valſalva, when he was a young man (*n*); but alſo by deterring the patient from ſwallowing, ſince even when the paſſage is open, theſe parts, being compreſs'd by the aliments that are ſwallow'd, bring on danger of ſuffocation, as the dilated aorta did, in the woman who was diſſected by the ſame perſon (*o*), in the marquis Paulucci (*p*) and in Ferrarini phyſician at the court of Modena (*q*). But to return to the glands that compreſs the œſophagus, what the thymus, when tumefied, can do to produce this effect, is not only ſhown in this ſection of the Sepulchretum (*r*), but alſo confirm'd by the obſervation of Verdrieſius (*s*). And there are other glands, which, by their diſtention, preſſing immediately upon the gullet, without any thing being interpos'd, do, in like manner, produce narrowneſs, and coalition, and in particular thoſe that are call'd glandulæ dorſales: and this you will learn from the ſame ſection (*t*), and ſtill more from ſome obſervations of a great number of diſſectors, which are pointed out by me, in the Epiſtolæ Anatomicæ (*u*), and which you may join to the Sepulchretum, careleſs of the heſitation of Mauchart (*x*), when he wonder'd that thoſe, at leaſt, which are taken from Laurentius, and Diemerbroeck, for the others he readily admitted of, were not to be found in his copies of thoſe authors works, becauſe he would not have wonder'd, had he obſerv'd, that as Laurentius, and Diemerbroeck, had both of them revis'd their writings, the firſt ſince the year 1595, and the laſt ſince the year 1679, and had made additions to them at the ſame time, it was proper for me, not to make

(*l*) Epiſt. 15. n. 15.
(*m*) Epiſt. 18. n. 22.
(*n*) Epiſt. 17. n. 19.
(*o*) Ibid. n. 25.
(*p*) Ibid. n. 26.
(*q*) Epiſt. 18. n. 17.
(*r*) Obſ. 10.
(*s*) Eph. n. c. cent. 8. obſ. 90.
(*t*) Obſ. 16.
(*u*) Epiſt. 9. n. 46.
(*x*) Diſſert. ſupra ad. n. 15. cit. §. 6.

uſe of thoſe former, but of the latter, editions, in which, if you enquire, thoſe very words are to be found, that I have quoted from each.

Mauchart however, as he is a man no leſs cautious, than humane, on ſuch an occaſion, has at leaſt ſaid, that which cannot be denied, I mean, that the words are not to be found in his copies of theſe authors. But another gentleman who is, in other reſpects, very learned, having in his diſputation on the fiſtula lachrymalis, happen'd to light, among other things that he took from me, on a paſſage of Ariſtotle, from the ſecond book *De generatione animalium C. V.* which was quoted by me, *en paſſant*, in the ſixth of the Adverſaria (*y*), and having copied the words, as they are given by me, has pretty confidently pronounc'd, " that theſe words were not really to be found, in the " place quoted," not once calling to mind, that ſome might, perhaps, make uſe of copies, which were differently divided from his. And as with Sylveſter Maurus, I follow'd not only " the common diviſion, of the works " of Ariſtotle, into books, and chapters, but alſo the common tranſlation," or rather, the very words of Ariſtotle himſelf, I hop'd, indeed, that if any ſhould chooſe to collate the paſſage with the original, from whence it was taken, they would look for it according to the common diviſion, or, if they happen'd to be without this, that they would readily find the paſſage, in their editions of that ſecond book, in which the queſtions of the proofs of fecundity are treated of, and in that paſſage would find the ſame words, or at leaſt, the ſame ſentence.

And I ſay the ſentence, leſt you ſhould, perhaps, be put to a ſtand by that one word *colorent*; for that Ariſtotle meant this, is not only demonſtrated by reaſon, but affirmed by phyſicians, and amongſt them by Niphus (*z*), who had explain'd the ſame book, and paſſage, of Ariſtotle, a hundred and twenty years before the paraphraſe of Maurus (*a*).

And indeed, when I examined the word χρωματίζωσι, which Ariſtotle has made uſe of, in the Greek text, as it was proper I ſhould, and which certainly ſignifies *colorent*, *tingant*, *inficiant*, that is " colour, ſtain, or dye;" I made not the leaſt doubt, but it ought to be thus render'd, and conſequently, ſuppos'd it to be owing to an error of the copiſts, or printers, that in the tranſlation *perficiant* is fooliſhly inſerted, in the place of *inficiant*. And this remark, I was willing to throw in, on this occaſion, leſt thoſe who read heſitations, or cenſures, of this kind in diſſertations that have been much commended, and have gone through more than one impreſſion, ſhould ſuppoſe, in conſequence of my perpetual ſilence, and ſtill more from the authority of thoſe by whom both theſe diſſertations were written, that theſe ſtrictures are juſt.

For as to a ſomebody, whoſe name I would not ſo much as enquire into, but only into this one thing, whether he could ſay, which has been denied, that he had receiv'd any provocation from me; as to ſomebody, I ſay, whether more fool, or knave, I know not, having, as I was told in former years, babbled out ſomething raſhly, and injuriouſly, in oppoſition to the opinion of the greateſt men, and the moſt proper judges, in regard to my method of writing, formerly, upon ſome books, which was ne-

(*y*) Animad. 65.
(*z*) Expoſ. in l. 2. Ariſtot. de generat. animal.
(*a*) Ejuſdem l. 2. c. 5. art. 3. ad. n. 11.

ceſſary,

ceſſary, and uſeful; I ſhall never be ſo weak as to ſuppoſe, that wiſe men expect me to make any reply: I will therefore leave him, and ſuch as he, if there are any ſuch beſides, to their own dreams, with the ridiculous interpretations of which I hear he is delighted. But if men who deſerve anſwers, object any thing to me, with humanity, and good nature (and I wiſh there were not many things to be objected) I ſhall always be ready to give them every ſatisfaction in my power, and if by no other means, at leaſt by the modeſty of my reply.

But now, returning to our ſubject; beſides the dorſal glands, from the turgeſcency of which Mauchart (*b*) mentions, that Mangetus had alſo ſeen a coalition of the gula, there are others, I ſay, which do not always occur to anatomiſts; although the dorſal glands do not always occur; that are more morbid, or at leaſt more frequently ſo, which may produce the ſame effect, as thoſe that were ſeen by the ſame author Mauchart (*c*), near to the termination of the œſophagus, and at the termination itſelf, would certainly have done, if their ſwelling had been more encreas'd, as thoſe were, which Valliſneri (*d*) found, together with that change into cartilage. And thus the ſame thing happen'd in the very termination of the œſophagus, from a tumour that was either ſchirrhous, or made up of hard fat, the obſervations of Bonetus (*e*) in preference to others, and of a ſurgeon commended by Mauchart (*f*), demonſtrate. But there is another part beſides theſe, which exiſts in all bodies, and which, by immoderately conſtringing the lower part of the gula, produces an impediment to deglutition. This part is the diaphragm, betwixt the muſcular fleſh of which, the lower part of the œſophagus paſſes. Wherefore you ſee, why in that ſervant-man, whoſe diaphragm the celebrated Heiſter (*g*) ſaw "very much inflam'd," there was an incapacity of ſwallowing," and why ſome hyſterical women perceive, in the place juſt pointed out, an obſtacle oppos'd to deglutition, as in that woman (*h*), in whom I accounted for it, from thoſe very muſcular parts of the diaphgram being convuls'd, betwixt which there is a foramen, or fiſſure, to tranſmit the œſophagus; for that woman, when ſhe had, already, got her food down almoſt to the ſtomach, perceiv'd an obſtacle in that place. It gave me no ſmall diſpleaſure, that when I had found this foramen to be much ſhorter than uſual, in ſome bodies, as in a certain old man who had been a porter (*i*), and in another old man, of whom I ſhall write hereafter (*k*), had met with it, as well as the œſophagus itſelf, which was in that part much wider, and more red, than uſual, very large, eſpecially in its breadth, I was much diſpleas'd, I ſay, that I could get no certain information in regard to either, whether they had perceiv'd any uneaſineſs, or difficulty, in ſwallowing, at that part.

17. And beſides thoſe that I have hitherto ſpoken of, I have alſo obſerv'd, that there is another part, which may compreſs the œſophagus, and that at the lower part. I mean the liver. For as there is an excavation, or

(*b*) Diſſ. cit. §. 12.
(*c*) §. 11.
(*d*) Obſ. ſupra cit. ad n. 15.
(*e*) Sect. hac Sepulchr. obſ. 22. §. 2.
(*f*) Diſſ. cit. §. 9.
(*g*) Diſſert. fiſt. obſ. med. miſcell. obſ. 15.
(*h*) Epiſt. 23. n. 4. & ſeq.
(*i*) Epiſt. 10. n. 19.
(*k*) Epiſt. 37. n. 30.

hollowing, in the poſterior margin of this viſcus taken notice of by the celebrated Winſlow (*l*), which gives way both to the protuberance of the ſpine, and to the lower part of the œſophagus, when about to expand itſelf into the ſtomach; it can be eaſily conceiv'd, that if the liver ſhould, at any time, become much ſwell'd, particularly in this part, and hard, it may preſs the œſophagus cloſe upon the ſpine. And, indeed, I ſee that in this ſection of the Sepulchretum (*m*), the liver is taken notice of, among the cauſes of impeded deglutition, but not as being injurious in this manner, although Ballonius (*n*) ſeems to come ſomewhat nearer thereto. There is a far different method, which is a juſt one indeed, but in part, by which the celebrated Fantonus teaches (*o*), why, the ſtomach being thruſt down into the umbilical region, by the vaſt bulk and weight of the liver, and its ſuperior orifice being compreſs'd, aliments, and eſpecially fluid ones, were ſwallow'd with difficulty, For he ſays, " that the cavity of the œſophagus " being thus elongated, by the force that was put upon it, had become much " narrower than uſual," and that the ſtomach itſelf, being ſtreighten'd by the compreſſion, had reſiſted the food which was about to enter into it. And I think that the former part of this kind of explication, might be added to the others, in order to render it more eaſily intelligible, in the firſt obſervation of this ſection, why a ſoldier " being ſeiz'd with an opiſthotonos, could " ſwallow nothing." For the neck being bent backwards, the œſophagus is diſtended, and thus as it becomes longer, ſo much in proportion is it made narrower, the anterior paries thereof approaching nearer to the poſterior. And the ſame kind of explication may, in ſome meaſure, take place, where Hippocrates (*p*) ſpeaks of " a diſtortion of the neck" coming on, ſo that the patient " could ſcarcely ſwallow."

18. It does not, however, eſcape me, that other cauſes of injur'd deglutition may be produc'd, ſome of which you will even find in the Sepulchretum. Yet you will not eaſily be perſuaded, to enumerate among theſe as certain, that which is promis'd in the thirteenth obſervation, by having this title prefix'd to it, " A difficulty of deglutition on account of the œſophagus " being divided." For Blaſius deſcribes this tube to have been ſo divided, within the thorax of that boy, as to return into one cavity again, a little below its diviſion, or as anatomiſts ſpeak at preſent to have become inſulated, or have made an iſland. But of any difficulty of deglutition, he does not throw in the leaſt hint; ſo that this conformation ſeems to have been more unuſual, than injurious. But we ought to form quite a different judgment, of that which the excellent John Graſhuis (*q*) found, I mean a morbid dilatation of the œſophagus, about the middle of the thorax, into a lateral ſac, upon which, ſymptoms of deglutition, that were every now and then varying, depended, and ſymptoms that could never have been explain'd, without diſſection. You may very ſoon expect another letter, which will, perhaps, be ſomewhat longer: but in the mean while, farewell.

(*l*) Expoſ. anat. tr. du bas ventre n. 259.
(*m*) Obſ. 26. §. 2.
(*n*) In ſchol. ad. obſ. 25.
(*o*) In ſchol. ad patris obſ. anat. med. 24.
(*p*) Sect. 4. aphor. 35.
(*q*) Act. n. c. t. 6. obſ. 73.

LETTER the TWENTY-NINTH,

Contains a few ſlight Obſervations upon the Singultus or Hiccup, and upon Rumination or chewing the Cud, in Men. The other Part relates to Pain in the Stomach.

1. ALTHOUGH you will find three ſections, in the Sepulchretum, upon the next diſorders of the ſtomach, "the Singultus, injur'd con-"coction, and pain," one upon each, yet I would not have you expect as many letters from me. For the two firſt, when they are violent, are of ſuch a kind, that the one is found to be join'd with fevers, inflammations, wounds, and other diſeaſes of the like kind, and the other with more conſiderable diſorders, which it is either the conſequence of, or has itſelf produc'd, ſo that they will be treated of, in conjunction with theſe diſorders, as I am unwilling to repeat the ſame hiſtories. And this you will be able to underſtand, very clearly, immediately upon turning to thoſe two ſections, which are written upon theſe ſubjects. For in the ſixth, which is upon injur'd concoction, you will ſee it expreſly declar'd to what diſeaſes moſt of the obſervations more peculiarly relate, and in what places they have been produc'd more at large. And in regard to the remaining obſervations, all thoſe that are written with any degree of accuracy, of themſelves ſufficiently ſhow, whether they ought to be refer'd to any other ſection. For there are ſome, in which you will not find a ſingle word, upon the ſubject of injur'd concoction, as that which you have under number eight, article the ſecond, and that under number one, in the Additamenta. And why any obſervation, like that which follows next, which refers to thoſe perſons who "were able to concoct, not to ſay retain, their food, and had an appetite "for it, almoſt to the latter part of their lives," ſhould be inſerted there, does not at all appear.

2. And what obſervation is there of the whole fifth ſection, from which you are not refer'd to another ſection? Or if you are not openly refer'd, do you not think that you might be with propriety, not to ſay that you ought? And yet, even with all this farrago of repetition, the whole number of the obſervations, when collected together, is but ſmall; notwithſtanding one of them (*a*) ſeems to be ſet down more than once. For which reaſon, I ſhould ſuppoſe four appendices were thrown in, that the whole ſection might not ſeem to be immoderately ſhort; in none of which appendices, any body is

(*a*) Confer. obſ. 6. cum §. 6. obſ. 7.

mention'd

mention'd to have been inſpected; and that, for the ſame reaſon, two diſſections were added of ruminating men, which I ſhould leſs wonder at, if they had been given where the queſtion is of vomiting: nor is that ſufficient; for laſt of all, a diſcourſe on rumination, or chewing the cud, is added from Peyerus, which is ſo long as to exceed the length of the whole ſection. But do not imagine, however, that theſe things are taken notice of by me, as if I entirely diſapprov'd them; but call to mind my intention. And even attend to theſe few things, which naturally aroſe in my mind, when I read over thoſe appendices upon the Singultus, and the obſervations of men who chew'd the cud, ſome from one occaſion and ſome from another, as is generally the caſe.

3. In the ſecond appendix, when Thomas Bartholin mentions among the cauſes of Singultus, a tumour that compreſs'd the nerves going to the ſtomach, and ſays "it was ſuſpected that there was a tumour of this kind, "in that man, whom I knew at Padua, and who was troubled with a perpe-"tual uneaſineſs from the hiccup;" the obſervation of Jo. Rhodius (*b*) came into my mind, which relates to the ſame caſe, and which, although it is ſomewhat obſcure, may nevertheleſs be look'd into by you. The ſame Bartholin aſks, in the third appendix, "why juſt opening a vein in the "arm" ſhould be of advantage in a certain Singultus, which he deſcribes, and which is really extraordinary? What? if the ſuperior phrenic vein, which you know accompanies the phrenic nerve, upon the quantity of blood, which was about to return, to that part where it would flow into that vein, being diminiſh'd, having been, conſequently, reliev'd of a part of its load, either preſs'd leſs upon its attendant nerve, or abſorb'd ſomething, from whence this nerve was irritated? And as in all theſe appendices, mention is made of remedies againſt the Singultus, nor even externals remain unnotic'd in the firſt, and the ſecond; it brings to my mind the ſucceſs of an eaſy, and obvious, remedy of Valſalva's, in a noble Count, that is milk, with which he fomented the abdomen; for as long as the cloths were wet with the milk, ſo long was the Singultus, which was ſo troubleſome to the patient, reſtrain'd: in which, however, theriaca, when laid upon the part, was not without its uſe.

But as to the remark, which is made in a kind of ſcholium (*c*), that is plac'd betwixt the third, and the fourth appendix, of a Singultus, which, although it came on in a certain fever, that was attended with the worſt of ſymptoms, was not mortal, it is a very rare inſtance indeed, and the contrary is aſſerted by two very eminent phyſicians; among the reſt, Franciſcus Valleſius (*d*), and Hieronymus Mercurialis (*e*), who deny that it ever happen'd to them to be witneſſes of a favourable event in a caſe of the kind, nor did it happen otherwiſe to Hippocrates, in that woman who lay ill in the *forum mendacum*.

And in the malignant fevers, in like manner, deſcrib'd by our Rammazzini (*f*), as many as ever were troubled with a Singultus, all periſh'd, and one of

(*b*) Cent. 2. obſ. med. 61.
(*c*) Ad §. 6. obſ. 7.
(*d*) Comment. in Hippocr. epidem. l. 3. ſ. 2. ægr. 12.
(*e*) Prælect. piſan. in eand. hiſt. quæ ibi 26.
(*f*) Conſtit. a. 1692 & duor. ſeq. n. 22.

them

them being diſſected, the ſtomach was found " to be mark'd here and there " with black ſpots:" and what was found, in the ſtomach of a certain man, who had been affected with the hiccup, you will learn from the *Opuſcula Pathologica* of the celebrated Haller *(g)*. Ledelius, however *(h)*, after having quoted Epiphanius Ferdinandus, as " calling God to witneſs, that he had " never been deceiv'd in predicting death in ardent, and malignant fevers, " which were attended with a Singultus," prudently admoniſhes us, " that " a patient ought not to be deſerted, as long as there is life, becauſe pro- " digies many times happen, in the cure of diſeaſes," as happen'd to him in a certain baker. And not to him alone, but to others alſo, as to Lanzonus *(i)*, the celebrated Delius *(k)*, and to me, in that epidemical conſtitution at Forli, in the year 1711, which I have already deſcribed to you *(l)*. For the two patients, whom I mention'd, in the firſt place, in that deſcription, were ſtill alive when I wrote theſe things; although whoever had then ſeen them, and particularly Garavini, who was more like a dead perſon, than a living one, for ſome days together, and had heard, beſides, the frequent Singultus of each, would have immediately given up all hope of their recovery.

4. But as to men who chew the cud, examples of which Peyerus has collected, in the greateſt number he was able *(m)*, and has refer'd ſome to rumination which was in-bred, and congenial, as it were, and others to that which is the conſequence of diſeaſe; the ſame perſon has imagin'd that two obſervations, of a nobleman, and of a monk, both of which you ſee here in the Sepulchretum *(n)*, relate to theſe two kinds, one to each. Both of them were made at Padua, and are the firſt of them all, and the only obſervations, beſides, which are join'd with diſſection; one thing is very fooliſhly added here, " that this monk had two horns." For Rhodius *(o)* does not ſay it, in which Peyerus blunders *(p)*, though he otherwiſe juſtly blames Bartholin, who has added it *(q)*, and thoſe who have follow'd Bartholin.

Certainly, Fabricius ab Aquapendente *(r)*, as he took notice of this ſame monk, would by no means have omitted that circumſtance, inaſmuch as he had, a little before, thought it quite neceſſary to add, " that the father of " this ruminating gentleman, had born a little horn on his head. And " among others, who copied that blunder of Bartholin, was Etmuller *(s)*, " who added one of his own, over and above; I mean that in theſe rumi- " nating men, the ſtomach had been obſerv'd to be much more fibrous, " and fleſhy, than uſual, as if it had been cover'd with a muſcular coat." I wiſh we could ſo defend him, as to ſuppoſe, that by the term *ſtomachus* he meant the œſophagus; for this part Plazzonus *(t)*, really, found " every- " where fleſhy, like a muſcle" that is, not only ſuch, as " all men evident- ly have," as Tryerus would have it ſuppos'd *(u)*; for unleſs it had been

(*g*) Obſ. 14.
(*h*) Eph. n. c. Dec. 3. A. 7. obſ. 127.
(*i*) Earund. cent. 1. obſ. 61.
(*k*) Ex. act. T. 8. obſ. 108.
(*l*) Epiſt. 7. n. 16.
(*m*) Merycol. l. 1. c. 6. & l. 3. c. 3.
(*n*) Obſ. 10. & 9.
(*o*) Cent. 2. obſ. 59.
(*p*) C. 6. cit.
(*q*) Cent. 5. hiſt. anat. 61.
(*r*) De ventric. inteſt. &c. ubi de vari. ventric. in fin.
(*s*) Prax. l. 1. ſ. 4. c. 1.
(*t*) Vid. Rhod. obſ. cit. 59 quæ 9. in Sepulchr.
(*u*) C. 6. cit.

much

much more fleſhy, an anatomiſt, of ſome eminence, would not have obſerv'd this one thing only, at the ſame time that he pronounc'd " all the other " parts of the body, to be in their proper ſtate." But for Etmuller; if however he did write theſe things; we cannot make uſe of this defence, inaſmuch as he; which all the things that he had ſaid before, in that chapter, ſhow; by the term *ſtomachus* always meant *ventriculus* or ſtomach.

Yet that blunder of Bartholin is ſtill more conſiderable, where he left theſe words, in his *Anatome quartum renovata* (*x*): " and indeed we cannot doubt but the ſtomach was double, in a ruminating man, ſpoken of by Salmuthus and others." And I wonder that this ſhould have been transfer'd into the Sepulchretum, in that Scholium, which is ſubjoin'd to the two obſervations, that teach the contrary, of which I have hitherto ſpoken, eſpecially as Bartholin could produce no diſſection, beſides theſe, of a man who chew'd the cud, not even from Salmuthus, and as, moreover, hares, and rabbets chew the cud, and nevertheleſs have not two ſtomachs.

5. However, although it never happen'd to Valſalva, nor to me, to ſee men who chew'd the cud, and much leſs to diſſect their bodies; yet it has happen'd frequently to us, to diſſect the bodies of men, who had been troubled with a violent pain in the ſtomach, of which the ſeventh ſection, as I have ſaid above, profeſſedly treats. And the obſervations of this kind, which I ſuppoſe to agree better with the purpoſe of this letter, than thoſe of others, I ſhall immediately purpoſe. And firſt I ſhall give you three from Valſalva.

6. A man of ſixty years of age, of a bilious conſtitution, had begun, for many years, to complain of a weakneſs, and pain, in the ſtomach, when at length a hardneſs, about that region, came on, below which, ſome hard globules beſides (but theſe were very moveable) were perceiv'd, and attended with ſome tenſion of the whole belly. The belly, when ſhaken, evidently ſhow'd that a kind of humour was extravaſated within it. There were frequent borgorigmi of the inteſtines, and eructations of flatus. Vomiting return'd, more than once, at the diſtance of ſome hours after eating; which, however, had happen'd but ſeldom in the firſt years of the diſeaſe.

In the mean while, the patient made but little urine, was very thirſty, and complain'd of a dryneſs of the tongue: his pulſe was weak, and ſmall. At length, though a great quantity of ſerum was diſcharg'd, by the urinary paſſages, and the ſwelling of the belly was diminiſh'd, yet the other diſagreeable ſymptoms, nevertheleſs, becoming every day more and more ſevere, and the vomitings being in the laſt month of his life, of a kind of ſerum ting'd, as it were, with ſoot, and ſmelling very ſtrong, ſo that the patient, himſelf, ſaid it reſembled the bad ſmell of putrid fleſh; his ſtrength was gradually diminiſh'd, his ſpeech became ſtammering, and he died.

The abdomen, even then, contained a pint, or two, of ſerum, ſimilar to water, in which freſh meat has been waſh'd. The whole omentum was contracted into certain tuberoſities of different colours, which were mov'd, as that was mov'd. The ſtomach overflow'd with ſerum, of the ſame kind with that, which was thrown up by vomiting: but it was become quite hard, in about a third part of it: this part lay towards the pylorus, and had ſo

(*x*) L. 1. c. 9.

ſtreighten'd

ſtreighten'd it, that the aliments had ſcarcely room to paſs through, after being prepar'd in the ſtomach. But although the whole of this hard part, when cut into, ſhow'd a white and ſolid ſubſtance internally, of which it conſiſted; yet on that ſurface, which was turn'd towards the cavity of the ſtomach, it entirely reſembled both in colour, and ſmell, putrid fleſh, diſtinguiſh'd with certain bloody points.

7. You ſee that thoſe hard, and moveable, globules below the region of the ſtomach, were the tuberoſities into which the omentum had contracted itſelf: and that the upper hardneſs was a ſchirrhus of the ſtomach, which as long as it did not extend itſelf by its encreaſe, ſo as to compreſs the pylorus, and ſtreighten the paſſage through it, did not cauſe the vomitings to happen ſo frequently. The pain alſo, in the beginning of the diſeaſe, was but ſlight, as it aroſe only from ſome weight of the ſchirrhus, and from the reſiſtance of the coats, which it occupied, to the proper extenſion of the ſtomach being made, for the reception of the food, or if this diſtention was brought on, from that part of the coats which was ſtill ſound, being incapable, of themſelves, to bear all the diſtention that was neceſſary, without uneaſineſs. But when the ſchirrhus was encreas'd, and degenerated, at length, into a cancer, and that ulcerated; the pains muſt, of courſe, more and more encreaſe. For the ſtomach being thus affected, concoction being vitiated, and the balmy nature of the blood deprav'd, it is not at all to be wonder'd at, that the other circumſtances of the hiſtory, ſhould alſo happen, eſpecially as that hardneſs of the ſtomach, and the tuberoſities into which the omentum, that is connected to the ſtomach, had contracted itſelf, made a reſiſtance to the free courſe of the humours. And from theſe conſiderations we may very well conceive how flatus, vomiting, aſcites, weakneſs, and death, were the conſequences of the original diſeaſe.

8. A woman of forty years of age, of a fleſhy habit, but a ſallow colour, having eaten onions, preſerv'd in ſalt, and vinegar, together with bread made from the meal of cheſnuts, began immediately to complain of a pain in her ſtomach. Which growing more and more violent, at the end of three hours, after eating this meal, ſhe died in cold ſweats, and a fatal ſyncope, which had ſeiz'd her.

Her belly being open'd, on account of a ſuſpicion that ſhe had been poiſon'd, every thing was found to be in its natural ſtate, except that the ſtomach was diſtended to a very great degree, and ſomewhat inflam'd; but the blood preſerv'd nearly its natural fluidity.

9. Valſalva thought proper to make this conjecture, in regard to the cauſe of the diſeaſe, that an effervеſcence being excited by the incongruity of that kind of food, this very great diſtention of the ſtomach had been, conſequently, brought on, which, by compreſſing the ſanguiferous veſſels thereof, caus'd a remora to the blood's motion, from whence inflammation aroſe, and from this, an irritation of the nerves of the ſtomach, from whence, again, a ſyncope.

But however, this hiſtory may confirm what Diphilus, and Mneſithæus, ſay in Ludovicus Nonnius (*y*), of cheſnuts, and the experience they had had

(*y*) Diætat. l. 1. c. 45.

of their power of cauſing flatus; yet the ſame author does not deny, that they are in very common uſe, among many of the people inhabiting the Alps, and it is commonly known, that a bread is even made from their meal, which thoſe people feed on in common, where, as Avantius (*z*) alſo aſſerts, "a great quantity of them grows." Muſt we therefore, accuſe the onion, which was added to that kind of bread, and ſuppoſe it, by means of its acrimony, to have attenuated, and cut, the groſs particles of the cheſnuts, and ſo let looſe too great a quantity of air? As if, truly, the ſame ruſtic inhabitants of the Alps did not eat onions, occaſionally, with their bread. This woman, however, ſeems to have had a ſtomach ſomewhat weak, and unaccuſtom'd to ſuch a kind of food; and thoſe ruſtics ſeem to have, as Horace (*a*) ſays,

Dura meſſorum ilia;
The reapers brawny ſides.

But I believe that theſe circumſtances were much better known to thoſe who knew the woman, than to us. Whence then could the ſuſpicion of poiſon ariſe, as they were not unacquainted with all theſe things? For if the woman had cramm'd herſelf, with an immoderate quantity of this food, there is no doubt but they would have known it, and have had leſs reaſon to ſuſpect poiſon. You ſee, in this very ſeventh ſection of the Sepulchretum (*b*), that a little boy, in like manner, "died within the ſpace of three hours," from the immoderate eating of grapes. Yet there appear'd, at the ſame time, another reaſon, why this child died in that manner. "For the ſtomach being perforated, contained a great quantity of green ichor, which, without doubt," ſays Rhodius, the writer of the obſervation, "was an æruginous bile," that was endow'd with a very great acrimony.

How then was the caſe? I ſhould be entirely of opinion, that in this woman, alſo, there was ſome other peculiar circumſtance lying hid, although it did not fall under the notice of the eyes, in diſſection, ſo that by this ſhe was already diſpos'd, if any cauſe did but happen to be added, as that flatulent and unuſual kind of food, ſhe was, I ſay, ſo diſpos'd, as to be affected in this manner therefrom, though ſo many others are not us'd to be at all affected by the ſame diet, whether this diſpoſing circumſtance lay hid in thoſe juices, which the food met with in the ſtomach, or in the nerves, which were endow'd with a more exquiſite ſenſe, and conſequently more prone to irritation, and more ready to transfer that irritation to any other part, that is to the heart, in particular, to which the ſame nerves go, that go to the ſtomach.

In this manner therefore, or nearly ſo, you will underſtand what Valſalva conjectur'd: although we have ſcarcely any proof of the bad habit of this woman, from the ſallow colour of her ſkin. Without doubt, in two other women, both of whom had eaten a melon, the one "ſtew'd in an oven with onions, and pepper," after which ſhe drank cold water, and the other, "boiled in milk, and well ſeaſon'd with pepper," after which ſhe drank cold, and ſour ſmall beer, and who were both taken off ſoon after by a ſudden death; in theſe

(*z*) Not. ad. Fieræ cœnam, ubi de pane non frumentac.

(*a*) Epod. 3.

(*b*) Obſ. 7.

women I ſay, without doubt, a bad diſpoſition of body was more evident, as in one of them there had been a ſuppreſſion of the menſes, for the ſpace of three months, and in the other, beſides an advanc'd age, of ſeventy years, a long weakneſs of the ſtomach, and a decreaſe of ſtrength. Yet there is alſo no doubt, but Chriſtophorus Seligerus (*c*), and Michael Erneſtus Ettmuller (*d*), obſerv'd more cachectic appearances in the body of one before diſſection, and more morbid appearances in the ſtomach of both, or at leaſt of one, by means of diſſection.

10. A nobleman of Bologna, who was aged more than ſixty, by one year, having been already troubled, for many years, at one time, with a hemicrania, and at another time, with a gout, which was frequently vague, and wandring, and ſometimes alſo fix'd, and at other times with calculi of the kidnies, was, laſt of all, ſeiz'd with a gout in the right hand, without any tumour, but with a mild pain, which, as the power of feeling was ſoon become leſs quick, and ſtrong, could ſcarcely be perceiv'd. His hand became entirely well; but in the mean while the right kidney was painful. But here alſo the pain was alleviated, fruitleſs reachings to vomit often recurring: however, when the vomiting ceas'd the gout ſeiz'd, in the ſame manner, upon his lower limb, and gave the patient excruciating pain at his calf, and at the ankle joint. After one or two days having paſs'd, that whole extremity of the foot was entirely depriv'd of the powers of feeling, and moving. Yet the day following, ſome ſenſe of pain return'd to the paralytic foot, and to the patient, both good ſpirits, and good pulſe, which, at other times, was, for the moſt part, intermitting, and unequal, in the right arm.

At length, the day before he died, he threw up his food, mix'd with a watry matter: and felt a ſlight pain, with pulſation, and heat, at the region of the ſtomach. A little after that he vomited twice a yellow humour. On the following night he ſlept but little. In the morning, he complained with a very low voice, of three things, which had been continually troubleſome to him, a great thirſt, a bad taſte in his mouth, and loſt appetite: and the fever, which had before diſcover'd itſelf, in the pulſe only, and that at times, was now evident. But the pain, and pulſation, of the ſtomach continuing, with a great heat in the back, the pulſe, which had been very languid, the evening before, was now, from a great diſcharge of blood, by ſtool, totally aboliſhed.

With this blood was mix'd a matter, that ſmelt very ſtrong, and which, like melted pitch, follow'd the ſtick that was put into it, if you drew it back. In the mean while, the foot was very much in pain; and there was a ſenſation of ſomething aſcending, as it were, through the leg, and afterwards a ſenſe of weight, in the lower part of the belly. But in the right arm, the power of motion was gradually loſt, the nails of the fingers becoming livid: and that arm was ſoon after render'd quite paralytic. Some hours before death, frequent tremors were perceiv'd, about the præcordia. The diſcharge of blood returning by ſtool, as before, and the vomiting of the ſame kind of matter, perhaps, being at hand (as a nauſea, and ill ſmell, like that of fæces, proceeding from the mouth, ſeem'd to ſhow) the

(*c*) Eph. n. c. dec. 2. a. 1. obſ. 139. (*d*) Earund. cent. 9. obſ. 66.

patient, ſaying he was ſuffocated, died about ſix and thirty hours after being attacked with the pain of his ſtomach.

The abdomen being open'd, the whole ſubſtance of the inteſtines was found to be occupied with a dreadful inflammation, from the ſtomach, quite to the termination of the rectum, ſo that not the leaſt part of them was left unaffected with it. And in the inteſtines, a bloody matter, like that which had been diſcharg'd, was contain'd. The ſtomach and the kidnies were ſound. In the thorax, the poſterior parts of the lungs, and particularly on the left ſide, were ſlightly inflam'd. In the pericardium, was a ſmall quantity of water. In the heart were no polypous concretions.

11. The aphoriſm of Hippocrates (*e*), " If any perſon that is weaken'd, " and emaciated, by an acute, or long continued diſorder, or even by a " wound, or from any other cauſe whatever, diſcharge *atra bilis* or black " blood, as it were, by ſtool, he dies on the day following," except that it ſeems to have been fulfill'd in a ſomewhat ſhorter ſpace of time, ſquares ſtill better with this caſe, than with that to which it is applied by Ballonius, as you ſee here in the Sepulchretum (*f*). For his patient, who was, in the ſame manner, troubled with pains, at the region of his ſtomach, did indeed, " diſcharge an atrabilious blood," the day before he died, but it was " by " the mouth." However Ballonius did not deſcribe any diſorder in the ſtomach itſelf, and Valſalva has repreſented it as being ſound. Both of them diſcover'd ſuch appearances, near the ſtomach, that might eaſily account for the affection of that part. And the pulſation which was remark'd by Valſalva, was without doubt the effect of the blood, which was collected in the neareſt parietes of the inteſtines, and the cauſe of its diſcharge into their cavity. For the veſſels, by having their coats ſtill more and more diſtended, were at length ruptur'd, and had their contents evacuated. To which, perhaps, a part of that prediction, to return to Hippocrates, may be applied (*g*): " palpitations about the belly ſhow an eruption of blood to be at " hand."

But be that as it will, this one thing is certain, that almoſt all the force of ſo long, and ſo various, a diſeaſe, had, at length, ſuddenly fallen upon the veſſels of the inteſtines, and had drawn the ſtomach, which is conjoin'd by veſſels, with the inteſtines, and even by the very ſubſtance itſelf, into conſent with them. So you will ſee it was drawn into conſent, in another perſon, who, through the whole courſe of the diſeaſe, had diſcharg'd a black matter by ſtool, and in another, alſo, in whom the upper part of the inteſtines had grown livid. Theſe two hiſtories, you have in the fifth ſection preceding (*h*), which relates to the Singultus. And, without doubt, you would have a third alſo, in this (*i*), where all the inteſtines are deſcrib'd as being extremely red, from inflammation, if the diſeaſe were alſo deſcrib'd, as the diſſection is, without which I wonder how this, and perhaps others, came to be plac'd among thoſe that relate to the pain of the ſtomach.

And certainly, in the volumes of the Cæſarean Academy (*k*), you will find more than one obſervation, wherein not only the ſtomach was affected,

(*e*) 23. §. 4.
(*f*) Obſ. 19.
(*g*) Prædict. l. 1. n. 20.
(*h*) Obſ. 1. & 6.
(*i*) Obſ. 50.
(*k*) Dec. 3. a. 9. obſ. 222. & act. t. 2. obſ. 108. 2. loco.

while the patient was living, but alſo an inflammation, or bad ſtate, in ſome meaſure, of the inteſtines, and not of the ſtomach, was found after death. But if, in regard to that obſervation, which I juſt now copied from Valſalva, you rather aſk, why the inteſtines themſelves, as they were ſo very much affected, were not, conſequently, excruciated with the pain, by which the conſenting ſtomach was attacked; I believe I ſhall not be very far ſhort of truth, if I ſuppoſe that, as in this man ſo many nerves ſpeedily, and frequently, became paralytic, the nerves which went to the inteſtines, alſo, were reſolv'd. But now I will likewiſe add ſome of my own obſervations, as I have promis'd.

12. A woman of forty years of age, who had been us'd, for the moſt part, to eat ſalt victuals, and drink generous wine, had been for many years ſubject to pains of the ſtomach, of which, a loſs of appetite for food, and a nauſea, were the conſequences, and theſe were ſoon after follow'd by repeated vomitings of blood, with a continual fever, watchings, and thirſt. And although the belly, when examin'd with the hand, never diſcover'd any remarkable hardneſs, in any part of it; yet the region of the ſtomach was not quite free, at times, from an uneaſy ſenſation when ſcarcely any preſſure was applied, and this even when the more violent pain was abſent. She complain'd alſo of her loins; but this was only, either when ſhe was about ſome greater labour than uſual, or when ſhe lifted any conſiderable weight.

A very obſtinate pain of the head was, moreover, ſometimes added, to the other complaints. Againſt all theſe diſorders of the ſtomach that I have mention'd, as often as ever they recur'd with any great violence, blood-letting was always of ſome advantage: drinking plentifully of water alſo, in which a piece of bread, only, had been boil'd, was likewiſe of great uſe: and ſhe ſeem'd, more than once, to have been quite recover'd, by the long uſe of milk-diet, and receiv'd freſh ſpirits every month, by the diſcharge of blood from the uterus, which continued regularly to the time of her death. In this manner it was that death came on.

Not long before, a hard tumour appear'd on each ſide, above the clavicles, where the external jugular vein goes down on the neck; this tumour created pain, nor would yield to any remedies, ſo that it encreas'd every day, and already caus'd reſpiration to be carried on with ſome difficulty. To this was added a continual fever, increaſing in the evening, with which a little rigor was, ſometimes, obſerv'd. She complain'd that her head was in pain, beſides her ſtomach, where the pain was continual: with which, however, there never was, at this time, any vomiting of blood. She had, continually, a troubleſome thirſt, and a ſenſe of very great bitterneſs in the mouth, from which, in the latter days of her life, a very ill ſmell proceeded; but no pus ever was obſerv'd to have been diſcharg'd therefrom. Under theſe ſymptoms, ſhe drag'd on life much longer, than could have been ſuppos'd from her pulſe, which, beſides its being already ſmall, and weak, frequently became ſmaller, and more weak, particularly in the laſt fifteen days, when ſhe took nothing but broth, and a little wine, as ſhe could now bear no kind of aliment beſides, and much leſs medicines.

This lean carcaſe was brought into the anatomical theatre, when, as I was teaching anatomy, in the month of February, of the year 1744, and had already

already demonſtrated the male organs of generation, the female organs were wanting. The belly, therefore, being open'd, I ſaw the omentum roll'd up towards the upper part of that cavity, and extended ſo, that the tranſverſe arch of the colon immediately occur'd to the eye, being now below the navel, whereas it generally lies immediately below the ſtomach. Into which ſituation it, probably, might have been puſh'd down, by the ſtomach, in ſome meaſure, though not entirely, as the left part of the fundus, of this viſcus, deſcended lower than uſual.

And the ſtomach was even livid externally, and particularly in a very conſiderable part of it, and had, at the ſame time, its coats very much thicken'd, and harden'd, unleſs where they were, already, become ſo rotten as to be broken through with a touch, and to diſcharge a matter of a cineritious colour, and of a very ſtrong ſmell, which, like a kind of fluid pultice, was contain'd in the cavity of the ſtomach. Into this cavity, it had burſt out of the poſterior paries of the ſtomach, which was immoderately thick, to a great extent, and internally tumid, and, in the ſame place, unequal, in a corrupt, rotten, and gangrenous ſtate, and of the ſame lurid colour as the foremention'd matter was, ſo as to make it certain, that a tumour, or abſceſs, of the worſt kind, had been ruptur'd in this place.

The pylorus was ſound, and all the inteſtines, among which was the colon, were, as it is reaſonable to ſuppoſe, after ſo long an abſtinence from food, contracted, from the beginning to the end. The ſpleen alſo was ſound, except that it was, in proportion, larger than uſual, and, internally, ſomewhat pale. But the right part of the liver ſhow'd ſome roundiſh and white ſchirrhi, about the ſize of ſmall grapes. Theſe tumours lay at a little diſtance from each other, on the ſurface, in ſuch a manner, as to be, in ſome meaſure hidden, within the ſubſtance of the viſcus; and when I cut into the liver, I ſaw one of them, which was intirely ſimilar to the others, that was quite buried within the ſubſtance. There was a great quantity of bile in the gall bladder, which was extremely yellow, and had ting'd the neighbouring parts with the ſame colour.

The poſterior ſurface of the left kidney had an oblique line upon it, to a conſiderable length, and of a whitiſh colour, made of a kind of tendinous ſubſtance, as it were, which, as I perceiv'd, when I cut into the kidney, was carried to a great depth, ſo as to reach to the tubuli, in which the papillæ are receiv'd. You would have been ready to ſuppoſe, that it was the cicatrix of a former ulcer, ſo much ſimilarity had it thereto: but no where did there appear any mark of injury, though we look'd for it in the neighbouring tunica adipoſa, and in the muſcles of the belly.

The uterus was ſmall, and low, and very much inclin'd to the right ſide, ſo as to be much nearer to that ſide, than to the left. But the round ligament was, alſo, ſhorter on the right ſide, than on the left. The cervix uteri, and ſtill more the os uteri, were nearly in the ſame ſtate, in which they are generally found, in virgins; for the former was internally mark'd, with its oblique, and prominent rugæ, and the latter had its aperture very round, and narrow. Nor was the ring of the hymen wanting, notwithſtanding it was very low, and ſhow'd no traces of rupture. Yet behind it, were none of thoſe roundiſh caruncles, and but very

very few rugæ in the vagina, and theſe very ſlight, and the ſkin, which at the lower part of the abdomen, I obſerv'd to be, as it were, of a whitiſh colour, and ſpotted, did not greatly agree with what I had obſerv'd before.

The teſtes, in proportion to the age of the woman, and the bulk of the uterus, were large, and externally convoluted; but internally, the left had a kind of ſmall and empty cells, wrap'd up in a white, and thickiſh membrane, and the other contain'd, in a cell, not much larger than thoſe, a black, and half-concreted blood. The right falopian tube was pervious to the ovarium, but in the remaining part ſhut up; on the contrary, the left was open only to the uterus. It was ſurprizing in ſo lean a ſubject, except we allow for its being a female body, that there was ſo conſiderable a quantity of fat in the meſentery, and that even ſome remain'd in the omentum, and that in the interſtices of the muſcles, alſo, on the back, and the limbs, a much greater quantity was found, than thoſe who prepar'd the body would have wiſh'd; and theſe muſcles were of a very elegant red colour.

Beneath that yellow fat, with which the meſentery cover'd the vertebræ of the loins, and the trunks of the large veſſels, that adher'd to them, ſome glands lay hid, which were enlarg'd to a great degree, and ſo cloſely connected to thoſe veſſels that they could not be ſeparated, without great difficulty. All theſe glands were internally white, not very hard, but abounding with a purulent ichor. The others, throughout the meſentery, were not enlarg'd. But near the ſtomach, I obſerv'd one of the lymphatic glands to be grown much thicker, than natural, and harder, and to be of a lurid colour.

I then alſo ſaw, that the pancreas was univerſally thicken'd, and, at the ſame time, ſomewhat dry, and become a little hard, if you except a certain part of it, which had grown out into a white ſubſtance, almoſt like the thymus.

When we open'd the thorax, we, firſt of all, found the two loweſt jugular glands to be of a whitiſh colour, and enlarg'd in every one of their dimenſions, to the breadth of two inches, at leaſt. Theſe glands made up that hard tumour, on both ſides, which I mention'd before; for they were alſo found to be hard, notwithſtanding that on the inſide, they contain'd a purulent ichor, part of which flow'd out, while the clavicles, under which, and the neighbouring part of the ſternum, theſe glands harbour'd themſelves, were taken away. The other jugular glands were, alſo, ſimilar to theſe, in colour, and hardneſs, and in the ichor they contained. Yet theſe had not grown out into ſo large a bulk.

The axillary glands, however, had not been encreas'd in their bulk, nor undergone any other change whatever. On the other hand, thoſe that are plac'd at the firſt diviſion of the aſpera arteria, were of a blackiſh colour, mix'd with white; and from a very ſmall ſize, were become not leſs than middle-ſiz'd grapes: they were likewiſe pretty hard, and abounded with the ſame kind of purulent ichor, which I ſaid was contain'd in ſo many other glands.

Yet the aſpera arteria itſelf was found, even in the neck, as the whole

tract

tract of the œſophagus was, in like manner, from the upper part, to the lower. Nor was any diſorder obſerv'd in the lungs, which were ſomewhat turgid with air: nor yet in the heart, if you except ſome roundiſh tubercles, of a depreſs'd figure, made up of a ſomewhat hard, and compact ſubſtance, and ſo frequent, as to be almoſt contiguous to each other, which beſet the whole borders of the mitral valves; and in one of the ſemilunar valves, a kind of ſmall ſcale that had grown to it, but was not yet become bony.

Finally, the brain was not only not lax, but inclining to hardneſs, yet ſeem'd to be nearly in its natural ſtate, unleſs that in the lateral ventricles, there was ſome quantity of a pellucid water, and the plexus choroides was pale. But the pineal gland was a little more firm, and globular than uſual, and inclin'd more to a white colour, than it generally does. And, notwithſtanding moſt perſons, now, do not take this for a gland, yet I thought it might not be amiſs, to take notice of this circumſtance, in a body wherein ſo many glands were obſerv'd to be diſeas'd.

13. The ſame obſervation makes us ſuſpect, that the beginning of this long diſeaſe, which at laſt carried the woman off, was in ſome gland of the ſtomach, which being gradually encreas'd, and grown hard, afforded, by its tumefaction, an obſtacle to the courſe of the blood, for which reaſon it burſt forth, more than once, from the neighbouring veſſels that were dilated, and particularly, in a woman who made a free uſe of generous wine, and ſalt proviſions. And after that by this kind of intemperance, not only the bulk of the gland, and the extenſion of it, had been by degrees, more and more, augmented; but alſo the nature of the included humour had become more deprav'd, a purulent corruption, at length, came on, from whence, even before the tumour had any aperture in it, ſo great a quantity of ill-condition'd ichor had been thrown into the ſmall veins, and the lymphatic veſſels, that many other glands were infected with the ſame taint.

If the woman had liv'd ſome time longer, it is not difficult to foreſee, by way of conjecture, what would have happen'd to the pancreas, and the ſcirrhi of the liver. As to there being a great quantity of bile in the gall-bladder, it is not at all ſurprizing, as I ſaid in the preceding letter *(l)*, that this ſhould happen, where, for a long time, nothing had been contain'd in the ſtomach, and the upper part of the inteſtines, which by diſtending them could compreſs this receptacle. And as to the neighbouring parts being ting'd with the colour of the bile, this is a circumſtance which happens ſo frequently, in dead bodies, that in regard to accounting for any diſorder therefrom, it is ſomewhat more natural to follow the laſt ſcholium, which is ſubjoin'd to the ſixteenth obſervation, in this ſection of the Sepulchretum, rather than the obſervation itſelf, eſpecially in this caſe, where there was in the ſeveral parts of the body ſo great a number of real, and certain, appearances of diſeaſe.

However, if you ſhould deſire to have other examples of tumours, or abſceſſes, in the ſtomach, beſides thoſe which are to be found in this, and the next, that is the eighth, ſection of the Sepulchretum; you will find ſome to add to them, among the monuments of the Cæſarean Academy *(m)*, and

(l) N. 6. *(m)* Dec. 3. a. 5. obſ. 175 & a. 7. obſ. 142. & cent. 3. obſ. 13.

from

from other books beſides, but in particular, from the works of Frederic Hoffmann (*n*).

14. An old woman had, already, lain ſome months in this hoſpital, on account of a tumour which rais'd up her belly, about the navel, and below it, but more on the right ſide, than the left. For which reaſon ſhe could not lie down on her left ſide. The tumour was really large, but ſeem'd larger, for this reaſon, that the hypochondria, and moſt of the other parts of the belly, had ſubſided much, from a loſs of fleſh, which was univerſal through the whole body, but moſt conſiderable on the left ſide: could this happen becauſe the woman always lay on her right? The tumour ſeem'd very moveable, if you took hold of it betwixt your hands, and puſh'd it to one ſide, and to the other. And it had ſcarcely any pain.

On the other hand, there was a perpetual complaint of a kind of uneaſy ſenſation, in the ſtomach. For which reaſons, ſome were ready to conjecture, that this tumour was in the omentum, by which means the ſtomach was drawn downwards, and troubl'd in its functions. With this uneaſy ſenſe in the ſtomach, there was ſometimes a deſire to vomit, but no vomiting. And now there was, beſides theſe ſymptoms, a continual kind of fever, which continued, in conjunction with all the other ſymptoms, that I have ſpoken of, even to the very cloſe of her life, that is to the middle of October, in the year 1735.

The belly being laid open after death, it was evident that the tumour was in the right ovarium: which had grown out into cells, full of a ſoft matter indeed, but not fluid, and of a cineritious colour inclining to yellow, but without any diſagreeable ſmell. The tumour was increas'd, by the neighbouring tube being condens'd with it, which was, alſo, much enlarg'd, and become pretty thick; whereas the uterus, and the other parts that belong to it, were only of their natural ſize, and in a ſound ſtate. This tumour was connected to the contiguous ſide of the pelvis, and in ſome meaſure, alſo, to the neareſt inteſtines, ſo that it could be more or leſs mov'd, by means of moving theſe parts. The inteſtines were livid from inflammation: yet they had no bad ſmell, nor yet the ſtomach, which was brought to me, by the perſon who diſſected the body, and by whom, the other circumſtances, that I have hitherto ſet down, were accurately related, that is by our Mediavia.

The reaſon of his bringing the ſtomach to me, was that I might, after having examined it, clear up a certain doubt of his. The cavity of it was very much contracted, on its internal ſurface, here and there inflam'd, in ſeveral places, and in the very middle of the neck, or upper part of the ſtomach, was an ulcer, nearly of a circular figure, which, in its diameter, was ſomewhat ſhorter than three fingers breadths, and of a very ſmall depth, as in it there appear'd to be a great number of lenticular glands, of a middle ſize, and ſo very manifeſt, that I inſerted a briſtle into an orifice, which was ſeen in the center of them. Yet this ulcer was ſurrounded with pretty thick lips: and the ſubſtance of the coats of the ſtomach was become more thick, and hard, in that whole ſpace which correſponded, externally, to the ulcer, than in any other part.

(*n*) Medic. Rat. t. 3. §. 1. c. 7. §. 26.

But as the ſtomach was entirely perforated, almoſt in the middle of the ulcer, Mediavia enquir'd of me, whether I imagin'd that this foramen could have been accidentally made, with the knife, in taking out of the ſtomach; for he affirm'd, that nothing had been found in the belly, beſides a little ſerum, in the lower part of the pelvis, which could be ſuppos'd to have been extravaſated, out of the ſtomach, whereas it ſeem'd that much ought to have been effus'd, in conſequence of the patient having been, conſtantly, in a recumbent poſture.

I however, although I thought it but little probable, if the ſtomach had really been cut by the knife accidentally, that this ſhould have happen'd in that part, in particular, which correſponded to the middle of the ulcer, nor did the figure, and magnitude, of the foramen, which was almoſt capable of admitting a little finger, ſeem to be of ſuch a kind, that they could properly be refer'd to the point, or the edge, of the knife; yet that I might ſatisfy both him and myſelf, as we were both equally deſirous to know the truth, I examin'd with accuracy, a ſecond, and a third time, the edges of the ulcer. And when I ſaw them to be not only callous, but unequal, and the more the foramen went towards the outſide, to be comprehended in the leſs circumference, which two circumſtances, the knife certainly could not have been the cauſe of, by having cut from without inwards; I judg'd that this aperture was not to be attributed to the knife, but to diſeaſe.

For as to nothing having been extravaſated, from the ſtomach into the belly, that might have happen'd for this reaſon, that the external membrane was, by degrees, extenuated, and not entirely eroded, or perforated, till the diſeaſe was come to the laſt extremity, and life was at the cloſe, at which time the ſtomach of the dying woman, being corrugated, and contracted, had nothing at all to pour out.

15. I lit, afterwards, on an obſervation of Mercklin, which you will alſo find to be related here, in the Sepulchretum (*o*), that is, of a foramen, big enough to admit the extremity of a man's thumb, with eaſe, ſeated, in like manner, in the upper part of the ſtomach, at which part there had been, for many years, a continual pain, not very conſiderable indeed, but always pretty troubleſome. And that foramen was alſo ſuppos'd, by this learned man, to have been open'd after an old eroſion, but only in the latter part of life; for he judg'd that life could not have been drag'd on ſo long, if the food that had been taken in formerly, had been effus'd into the cavity of the ſtomach, as he obſerv'd ſome, which was taken in the day before her death, to have been.

In the ſame manner, likewiſe, you will explain a much more recent obſervation, that you read in the commentaries of the illuſtrious Academy of Sciences at Peterſburg (*p*), of a fiſſure in the ſtomach, through which nothing had been extravaſated into the belly, and which, nevertheleſs, the credible, and expert diſſecter denied, upon his oath, having made with the knife: for that ſtomach was, alſo, manifeſtly eroded, particularly in the part which is oppoſite to the fundus, and had been the ſtomach of a man,

(*o*) Obſ. 48. (*p*) Tom. 7.

who

who had a perfect reſemblance to a conſumptive perſon, and who had died of conſtant vomitings, which no remedy, or art, could appeaſe.

Neither was any thing found to have been effus'd, into the cavity of the belly, by Tyſon (*q*), (who is even ſaid to have found a perforation in the human ſtomach, three times) in an American, in whom he found the ſame kind of fiſſure. I do not, here, ſpeak of thoſe perforations, from which nothing could have flow'd down into the belly, either becauſe they open'd into the colon, which was agglutinated, as it were, to the ſtomach (*r*), or becauſe they were ſtop'd up by a part of the liver, which had grown to them (*s*). I alſo paſs over thoſe caſes, in which it is not ſaid, whether there was any effuſion, or not (*t*). When there has been an effuſion of the contents of the ſtomach, into the belly, I ſee that either a very ſpeedy death was the conſequence (*u*), or, at leaſt, that frequently it was not delay'd more than a very few days (*x*), if we reckon the days of the perforation, from the day of the diſeaſe being become very violent, as it happen'd in an obſervation of the celebrated Baron (*y*), which certainly deſerves well to be read, who, although he tells us that death did not follow till the eighth day, yet at the ſame time admoniſhes, that the foramen was in the upper, and interior, part of the ſtomach, ſo that it would have been very difficult for any thing that was drunk, to be extravaſated into the belly, unleſs after ſome time, and in particular motions of the body. And I made uſe of the word *frequently*, for this reaſon, becauſe I know that ſome obſervations are even extant, of the ſtomach being perforated, in which either that is not quite clear (*z*), or the contrary ſeems rather to appear (*a*). But you will compare theſe circumſtances together, and conſider them.

16. And although all, or the greater part of, theſe foramina, found in the ſtomach, relate to ulcers, which have ſooner, or later, entirely pervaded the coats of this cavity; yet you have, here, in the Sepulchretum (*b*), many other obſervations of the ſame viſcus being ulcerated, both internally, and externally, notwithſtanding ſome are repeated, as the letter fifth (for the ſame number five is ſet down over again, through neglect) in the forty-third obſervation, article the fourth, and the ſixth, in the twenty-ſeven h, under article the ſecond. But although there are repetitions, alſo, of other obſervations, that relate to different diſorders of the ſtomach, as of that which is under number twenty-ſix, article the fifth, in the twenty fourth; there is no repetition that is more worthy of excuſe, than where the twentieth is repeated, in the additamenta, under number two. For who would have imagin'd that the obſervation which had been propos'd by Blancardus, as if it had been taken from "a citizen" of his "city" of Amſterdam, was the ſame with that which Riverius had already given, as taken from a

(*q*) Vid. act. erud. lipſ. ſuppl. t. 3. f. 4.
(*r*) Sepulchr. ſ. hac 7. obſ. 13. f. 1. & Brunner Gland. Duoden. c. 9. & Haller. opuſc. pathol. obſ. 23.
(*s*) Sect. ead. 7. obſ. 5. ſecunda, & in addit. obſ. 3. & eph. n. c. cent. 3. obſ. 13.
(*t*) In ſchol. ad. obſ. 3. modo cit. primo & tertio loco, & ſect. ead. obſ. 7. §. 1.
(*u*) Eph. n. c. cent. 5. obſ. 43.
(*x*) Earund. cent. 3. & 5. obſ. 120. & Sepulchr. l. 3. ſ. 21. obſ. 25.
(*y*) Memoir. preſent. all' acad. r. des, ſc. tom. 1.
(*z*) Sepulchr. l. 3. ſ. 8. obſ. 14.
(*a*) Eph. n. c. dec. 3. a. 9. obſ. 91. & cent. 1. & 2. obſ. 151.
(*b*) Adde & ſeq. viii. ſectionem.

goldſmith of Montpelier; unleſs any one who, having learn'd the ingenuity of Blancard, in transforming hiſtories, and remembering a ſimilar obſervation to have been given by Riverius, had compar'd both of them together, and not only found them ſimilar to each other, but had found that they were, very evidently, altogether one, and the ſame?

But to return to thoſe that relate to ulcers, among others, the forty-eighth deſerves well to be read; for it is my opinion, that if this could have been extant, a hundred and twenty years before, it would have prevented Geſnerus, not to mention others, from being ſo ready to publiſh that which you have here under number thirty-ſix, of lizards for inſtance, and ſerpents, being generated within the viſcera, and killing with the permiſſion of the almighty, "about three thouſand men" by the moſt cruel pains. For, to paſs over the reaſonings, and admonitions, of our Valliſneri (*c*), which I could heartily wiſh had been read, and duly weigh'd, by many of thoſe who went on to publiſh obſervations of this kind, afterwards, without any doubt, or heſitation; at leaſt, in that forty-eighth obſervation, alſo, which I juſt now quoted, the hiſtory of a man, is copied from Hartmann, who was ſo firmly perſuaded of his having a lizard in his ſtomach, that he made no ſcruple to delineate the figure of it, and another is ſpoken of by Lucas Antonius Portius (*d*), who aſſerted that he had a frog in the ſame place, which ſometimes croak'd, and if he drank any water, ſwam about in it, and not to uſe many words, you will find from Brunnerus (*e*), that a woman, by reaſon of a biting, and other ſenſations, which ſhe felt in her ſtomach, was ſuppos'd to nouriſh a living animal there. Yet this woman, inſtead of her living animal, and the laſt of the two men, inſtead of a frog, and the firſt, inſtead of a lizard, had only tumours of the ſtomach, which were, for the moſt part, ulcerated.

I would, therefore, have you add to the Sepulchretum, the two more modern hiſtories, out of theſe three, with their ſigns, whatever they are, and their diſſections. For there are not only ſome others to be added, from the leſs modern hiſtories, as for inſtance, that which you will read in Freherus (*f*), of the very famous cardinal Baronius, who was deſtroy'd by an inſuperable nauſea, which aroſe from three ulcers in the mouth of the ſtomach, but alſo from the more modern in particular, many, as one of Brunnerus (*g*), with an ulcerous tumour, as that of Baſterus (*h*), which is, in general, not much unlike the former, as two of the celebrated Plancus (*i*), both of a callous ulcer, and others, in like manner, among which are ſome of the celebrated Haller's; for beſides that of a ſcirrhous ſtomach from the abuſe of vinegar (*k*), he has two others, one of which (*l*), deſcribes many tubercles therein, full of pus, the other (*m*), deſcribes the ſtomach, as being extremely deform'd with ſcirrhi, and abſceſſes, betwixt the membranes,

(*c*) Conſideraz. int. alla generaz. de' vermi.
(*d*) Vid. act. lipſ. a. 1704. m. Septembri.
(*e*) Gland. duoden. c. 9.
(*f*) Theatr. viror. erud. clar. p. 1. f. 2.
(*g*) C. 9. cit.
(*h*) Act. n. c. t. 8. obſ. 16.
(*i*) Epiſt. ad put. a. 1726. & epiſt. ad eund. de monſtr.
(*k*) Opuſc. pathol. obſ. 21.
(*l*) Ibid. obſ. 22.
(*m*) Ibid. obſ. 23.

where

where it adhered to the colon, with which it communicated, by means of an ulcerated paſſage that lay open.

For, as you read over, attentively, all theſe obſervations, beginning with that of Hermannus, and adding another, moreover, of the celebrated Goritzius (*n*), you will readily obſerve, that there are but very few, in which there was not an injury, either in the pylorus, or near the pylorus; ſo that for this reaſon, alſo, the opinion of Frederic Hoffmann (*o*), may ſeem to be, for the moſt part, at leaſt, not very abſurd, or contrary to truth, I mean that the pylorus is primarily, and principally, affected in a cardialgia, eſpecially, as in the next, and eighth ſection of the Sepulchretum (*p*), we read that the ſtomach was internally corroded, alſo, near to this orifice, and in this (*q*), that the orifice, itſelf, was not only very much ſwell'd, externally, and had vomicæ fill'd with white pus, but was likewiſe ſcirrhous, on the internal ſurface, and beſet with whitiſh, and indurated glands, more than the other part of the ſtomach.

Moreover, as you ſee that in the obſervations, which I have quoted from Hermannus, and Baſterus, either glandular, or fungous, excreſcences of the pylorus were join'd, in ſuch a manner, with ulcers, of this part, that they might be ſuppos'd to have grown out from the ulcerated ſubſtance of the pylorus itſelf; you will without doubt, enquire, whether the other excreſcences, which other perſons, and I myſelf, alſo, have ſometimes ſeen, both at this, and at other parts of the ſtomach, are all of them to be ſuppos'd to have proceeded from ſome ulcer of that viſcus? For you ſee, by way of example, in the additamenta to this ſection (*r*); that two *verrucæ*, or warts, were obſerv'd by Paulinus, in the ſtomach, about the left orifice, "adhering firmly together with their roots," one of them of the ſize of a ſmall apple, the other of the ſize of a pretty large filbert, but that no mention is made of any ulcer, from whence they aroſe; although, ſome time before, a maſs, equal to the ſize of an acorn, had been thrown up by vomiting, with a large quantity of blood: and indeed we generally ſee warts upon the ſkin, externally, without any ulcer.

But, as to what the Arabian Phyſicians have written, upon warts of the ſtomach, you will read it in Marcellus Donatus (*s*), and you have it in part, alſo, in the ſcholium to the appendix, which is ſubjoin'd by Bonetus, to the thirteenth obſervation of this ſection: although as the wart, which is there ſpoken of from Avenzoar, was of the bigneſs of an apple, it is not eaſily underſtood, how it was poſſible for it to get out of the ſtomach, and be thrown through the ſmall inteſtines, into the large inteſtines; ſo that it is very natural to ſuſpect this excreſcence not to have been generated in the ſtomach, but in that part of the colon (*t*), which is contiguous to the fundus of the ſtomach, eſpecially as vomitings are never ſaid to have been obſerv'd in that patient, but, always, ſtools of a morbid appearance, ſometimes bloody, and ſometimes of various colours.

(*n*) Eph. n. c. cent. 8. obſ. 20.
(*o*) Commerc. litter. a. 1731. ſpec. 44. in fin.
(*p*) Obſ. 4.
(*q*) In Addit. obſ. 6.
(*r*) Obſ. 5.
(*s*) De med. hiſt. mirab. l. 3. c. 5.
(*t*) Vid. etiam epiſt. 31. n. 21.

17. How-

17. However in regard to what the Arabians have call'd warts, which, if they were not polypi of the inteſtines, or of the ſtomach (of which kind nearly, I ſhould ſuppoſe that fleſhy ſubſtance to have been, that is deſcrib'd to have been thrown up after many vomitings of blood, in the appendix, of which I ſpoke juſt now) might be fleſhy excreſcences, as the verrucæ of Paulinus might alſo be, which in ſome meaſure reſembled warts, that were pendulous from a root; if you chooſe to ſuppoſe that theſe ow'd their origin to a kind of ulceration, or eroſion, I ſhall not be repugnant to your opinion. But I will rather enquire, whether you are to ſuppoſe the ſame thing of ſome others, as for inſtance, of that pretty large glandular caruncle, which was fix'd to the ſtomach, near the ring of the pylorus, by an oblong ſtalk, or radicle, which, as it is deſcrib'd by me to you, in the ſixteenth letter (*u*), you may compare with that which is given in the Sepulchretum, from our Prævot (*x*), which is ſaid to have been annex'd to the ſame part of the ſtomach, by an oblong membrane, and was, I ſuppoſe, like mine, in this circumſtance alſo, that it was not injurious.

For although it is thus ſaid thereof in the Sepulchretum, "this body "falling into the pylorus, without doubt, all the exit of the chyle might "have been entirely prevented, and various ſymptoms might have ariſen;" this exit is not, therefore, ſaid to have been prevented, or theſe ſymptoms to have ariſen; ſo that it by no means appears, why this title was prefix'd to the obſervation, "a conſumption from, a glandulous caruncle adhering to "the pylorus." To me, I confeſs, excreſcences of this kind, which are ſeen to hang pendulous from the ſkin, in ſome perſons, and are number'd, by ſome, among the marks of the mother, ſeem to have almoſt a ſimilar origin, which does not relate to ulcers.

Yet I would not deny, but it may poſſibly happen, that from accidental injuries, theſe marks may be broken, and ulcerated. So in one or two perſons, and particularly in an old man, whom I ſhall deſcribe to you hereafter (*y*), among thoſe who died of a blow on the head, I ſaw a kind of membranous flap, or fold, hang from the ring of the pylorus, in a lacerated ſtate, ſo that you could not doubt, but it had formerly been larger, nor was it as yet quite ſound on the extremity of its edge. There are alſo, other verrucæ taken notice of by me, in the ſame ring, not pendulous, but ſeſſile, or dwarfiſh, as it were, as in a porter, whom I ſhall ſpeak of hereafter (*z*), as having fallen from a houſe, and broken almoſt all his ribs, and, in like manner, in an old man, of whom I ſhall make mention (*a*), when, in treating of the gonorrhœa, I touch upon the diſorders of the proſtate gland. For in both of theſe bodies, two roundiſh corpuſcles, of the bigneſs of a vetch, adher'd to that ring, in the firſt of them, ſomewhat livid, in the ſecond, of a red colour, and in both of a glandular ſubſtance. And indeed in the ſecond, they diſcover'd, each of them, their ſeparate little foramina, though in a ſomewhat obſcure manner, which we could ſee in a more large, and more clear ſtate, in the neareſt lenticular glands. For theſe this man had very much enlarg'd in their ſize, in the continuation of the antrum

(*u*) N. 36.
(*x*) L. 2. ſ. 7. obſ. 138.
(*y*) Epiſt. 52. n. 8.
(*z*) Epiſt. 53. n. 37.
(*a*) Epiſt. 44. n. 19.

pylori,

pylori, through which, two or three prominent lines were drawn longitudinally, and terminated in thoſe two roundiſh tubercles: and upon each of theſe lines, two or three glands adher'd, being disjoin'd by ſome little interval.

Theſe lenticular glands, of the ſtomach, call back to my mind, another obſervation thereof, that relates particularly to this occaſion, as it was not taken from a man, in whom no ſigns of a diſorder in the ſtomach had exiſted, which, to the beſt of my knowledge, there had not been in thoſe juſt now taken notice of, but from one who was taken off by ſhort, indeed, but very violent, pains of the ſtomach.

18. A man of forty years of age, of a muſcular habit, and much given to intenſe thinking, had, for ſome days paſt, been troubled with a pain in the head, and a ſenſe of heat in making water, when after a ſupper, in which he had neither eaten too much, nor any thing that was unwholſome, he was ſeiz'd with violent pains in the region of the ſtomach. The pain of his head continued. Thoſe of his ſtomach were encreas'd. A great quantity of green matter was diſcharg'd by the inteſtines, and by the mouth. And with theſe ſymptoms, he died at Venice, on the beginning of the third day, which was in the middle of Auguſt, in the year 1707.

When the ſtomach was open'd, the right part of it was ſound: and therein I ſaw, in conjunction with my learned friends, a great number of lenticular glands, in the manner I have deſcrib'd in the third of the adverſaria (*b*). The left ſide of this viſcus was mark'd, in its fundus, with bloody ſpots, and theſe of a lively red: among which, ſome that began to be cover'd over with an ugly ferruginous little cruſt, ſhow'd that the diſorder had already inclin'd to a gangrenous ſtate. On the ſame ſide, where there were no ſpots, and where the internal coat ſeem'd to be ſound, I could eaſily preſs out the blood. The duodenum, and the reſt of the inteſtines, even when examin'd internally, had no appearance of diſeaſe. The gall bladder was contracted at the diſtance of two, or three, inches from the lower part of its fundus, and was again dilated, before it terminated in a cyſtic duct, ſo that it might ſeem to be divided into two veſicles.

The lungs adher'd, by means of their own ſubſtance, to all the parietes of the thorax, being connected in the ſame manner alſo, to the mediaſtinum; they were ſound however; for as to their being red, on their poſterior part, the back, and the poſterior parts of the arms, were ting'd equally of the ſame colour. Nor was there any blood, either in the heart, or in the auricles. In the other parts, all of which I examin'd, except the brain, there was nothing worthy of remark.

19. No great error, or irregularity, in point of living, had been committed by this man, as had been by him, whoſe ſtomach the celebrated Koehlerus (*c*) found to be inflam'd, and beſet with black ſpots: there was not the leaſt ſuſpicion of a medicine which had been of a nature not ſuitable to his ſtomach, as was the caſe in the hiſtory given by Klaunigius (*d*), or as you read, more

(*b*) Animav. 4.
(*c*) Commerc. litter. a. 1743. Hebd. 5. n. 2.
(*d*) Eph. n. c. cent. 3 & 4 obſ. 145.

than

than once, in this ſection of the Sepulchretum, of poiſon being either fraudulently, or accidentally, given. And ſome things had even preceded, as you might have obſerv'd, which ſeem'd to diſcover a conſiderable acrimony of the blood. Yet if you ſhould happen to be ſurpriz'd at any thing, in this hiſtory, you will ſtill more be ſurpriz'd, in that of a woman, which I have already promis'd you (*e*), and will at preſent give you.

20. A poor country woman, to appearance about fifty years of age, had been ſubject, at intervals, to a difficulty of reſpiration, join'd with a ſenſe of ſtreightneſs, a hard pulſe, and a violent agitation of all the arteries, ſo that the alternate motion thereof, fell under the notice of the eye, even in her very hands, and not only in the neck, and the temples. When her reſpiration was extremely difficult, ſhe came to this hoſpital, and having loſt a large quantity of blood, which was ſomewhat hard in its conſiſtence, ſhe was freed therefrom. Thus ſhe liv'd four years, when being ſeiz'd, at home, with pains of the ſtomach, ſhe died there, within four and twenty hours.

Her body was given to me, that I might teach anatomy from it in public, before the latter end of January, in the year 1737. As we examin'd every part in its order, theſe things ſeem'd worthy of remark, in the belly. The ſtomach was large, and half-full, and when we came to open, and examine it, we were ſurpriz'd that the contents had not been thrown up by vomiting. For it was ulcerated with many, and various eroſions, which ſeem'd recent, and were already affected with a gangrenous blackneſs. Some of them were very thick, and very ſmall, at the upper part of the ſtomach, ſome of which kind were, alſo, ſeen in the neareſt part of the duodenum: others were at a greater diſtance from each other, and larger, in the fundus, and more ſo, where the ſtomach began to expand itſelf from the termination of the œſophagus: nor was the œſophagus, itſelf, free from eroſions of the ſame kind; ſo that they ſeem'd to have been caus'd by the food which had been taken in, though of what kind this food had been, there was no certainty, nor could we form any tolerable judgment, from the matter which remain'd in the ſtomach.

The ſpleen was ſomewhat larger than it naturally is, and more lax, being connected, in the greateſt part of it, to the diaphragm, and in ſome part of it, to the ſtomach, which it is poſſible might ariſe from the encreas'd magnitude thereof. The uterus was very much inclin'd to the left ſide; and for that reaſon the round ligament was much ſhorter on the left ſide, than on the right. To one ſide of the cervix uteri, internally, a membrane of a pyramidal form adher'd, that had its upper part flatten'd, being ſmall in its ſize, thickiſh and white, which I judg'd to be the remains of an hydatid, that was formerly diſtended with water. The urinary bladder, quite from the orifices of the ureters, ſhow'd the ſanguiferous veſſels very conſpicuous by their redneſs; ſo that notwithſtanding they were very minute, the communications of one with the other, could not have been more clearly ſeen, if they had been fill'd by an injection of red wax. In this manner they were continued, in very great number, on both ſides, into the urethra, the internal ſurface of which

(*e*) Epiſt. 14. n. 35.

was

was taken up with them in a ſtill greater degree; but, for this reaſon, they were not quite ſo beautiful as in the bladder.

In the diſſection of the meſentery, which abounded with fat, and that of a very good colour, and conſiſtence, as the other parts did likewiſe, more than you would have ſuppos'd from firſt ſight, I ſaw glands which were ſound indeed, but much bigger than uſual, as many of them were even equal to beans of the largeſt ſize. The beginning of the ſuperior meſenteric artery was common alſo to the cœliac. The coronary of the ſtomach had a much larger diameter than uſual. But the vena cava, while it was cut through, above and below the liver, as is the cuſtom in anatomical theatres, did not pour out a ſingle drop of blood.

Both cavities of the thorax had a little water in them, which was ting'd with no colour at all: the lungs were turgid with air, and connected to the pleura, on the back-part, and on the ſides. In the heart, and in the jugular veins, in which there was a larger quantity of blood than in the inferior veins, was ſome appearance of a polypus. The parietes of the heart were, evidently, much thicker on the left ſide, than they ought to be, whereas, on the right ſide, they ſeem'd to be thinner than was natural. Yet there was no dilatation of the ventricles, or of the veins, or of the pulmonary artery, or, finally, of the trunk of the great artery. There was, indeed, ſomewhat of a hardneſs in the valves thereof, and in the trunk itſelf, both near the heart, and in other places up and down, in like manner, which were the marks of oſſifications, that would have taken place, if the woman had liv'd longer, though diſcover'd, at preſent, only by a kind of yellow colour, and were even already grown very hard, a little above the diaphragm, where they were larger, and more protuberant: but the trunk was, every where, of its proper diameter.

Yet it was not ſo in all the branches of that trunk. For beſides that coronary, of which I have ſpoken already, when I compar'd the carotid arteries one with another, a greater breadth was evidently to be ſeen, in that on the left ſide, than in the other. And as the left of theſe arteries, after having ſcarcely meaſur'd out an inch and a half in length, from its origin, was divided into two branches, by a very extraordinary inſtance, it was ſomewhat more dilated, where it began to divide, than arteries are accuſtom'd to be, in moſt perſons, at their diſtributions: and the ſame thing I obſerv'd, at the firſt diviſion of both the ſubclavians, into the larger branches.

At length, having open'd the cranium, on the twenty-eighth day, after the woman's death, the brain was not only without any morbid appearance, but had even no diſagreeable ſmell, nor was found, in any reſpect, worſe than others, that I diſſected at the ſame time, which were much more freſh.

21. In the thickneſs of the parietes of the heart, on the left ſide, being preternaturally encreas'd, you have a part of that cauſe, which ſo violently agitated the arteries, and in the ſeveral dilatations of theſe arteries, and the many beginnings of oſſification, the effects of the ſame agitation: all which circumſtances, you may compare with thoſe things that I have already ſaid upon the ſubject of ſpurious aneuriſms, as Lanciſi call'd them *(f)*.

(f) Epiſt. 24. n. 35. & ſeq.

You have, moreover, which particularly relates to the preſent purpoſe, the cauſes of a moſt ſevere pain of the ſtomach, in the eroſions of that viſcus. And as I alſo found eroſions, pretty ſimilar to theſe, in a ſhort time after, in the ſtomach of a drunken man, deſcrib'd in the fourteenth letter (*g*); to omit thoſe appearances, which I deſcrib'd juſt now, as having been ſeen, by me, in that Venetian (*h*); I am much in doubt, whether to attribute them all to I know not what kind of food, that was taken in, or rather to ſome poiſonous juices generated internally. Yet though I might perhaps do this, with ſome degree of colour, in one of theſe hiſtories; it ſeems, however, leſs poſſible to ſuppoſe it in the laſt, in which the paſſage to the ſtomach, that is the œſophagus, was alſo beſet with the ſame eroſions.

But in regard to the effects of poiſons, obſerv'd in the ſtomach, by means of diſſection, as I ſhould rather chuſe to treat of them, at once, in their proper place, than here and there irregularly, as I ſee is done in the Sepulchretum; I ſhall, for this reaſon, refer to that proper place (*i*), what I forbear to add at preſent: as for a like reaſon I ſhall alſo defer to another occaſion, thoſe things which relate to the pain of the ſtomach, from a conſent with other parts, and particularly with the kidnies.

22. But in regard to thoſe pains of the ſtomach, which ariſe neither from poiſon, nor are produc'd from cauſes that lie on the outſide of the ſtomach, if you enquire after ſuch things, as you may add to thoſe you have read above; I think you ought to add, in the firſt place, the obſervation of the illuſtrious Heiſter (*k*), in which he deſcribes a moſt violent cardialgia, brought on by a great heap of worms, which had ſo injur'd the ſtomach, about the left orifice, where he found them adhering, that it was bloody, and, in a manner, eroded: and this in an adult woman; not in children, in whom it is leſs ſurprizing, that almoſt ſimilar appearances were found by Bonetus, and by our Saxonia, as you have it in this ſection of the Sepulchretum (*l*). And although many examples (*m*) are given, in the ſame ſection, of a pain of the ſtomach, from calculi, that were form'd therein; yet you may add freſh examples from Lanzonus (*n*), from Contulus (*o*), and others. Farewell.

(*g*) N. 34.
(*h*) N. 18.
(*i*) Epiſt. 59. n. præſertim 21.
(*k*) Eph. n. c. cent. 5. obſ. 86.
(*l*) Obſ. 14.
(*m*) Obſ. 29. 31. & 32.
(*n*) Act. n. c. t. 1. obſ. 64.
(*o*) De Lapidibus, podagra, &c. c. 9.

LETTER

LETTER the THIRTIETH,

Treats of Vomiting.

1. WITH the pain of the ſtomach, which was treated of in the former letter, is frequently join'd vomiting, of which I am to write at preſent. And this you may obſerve, not only by reading the laſt letter; but alſo by turning over the eighth ſection of the Sepulchretum, and comparing it with the ſeventh. For you will find many obſervations, in which both of theſe ſymptoms are deſcrib'd, and not a few which are equally deſcrib'd in both ſections.

We however ſhall keep ſteadily to our former reſolution, and ſhall not produce any one of thoſe here, which we have either given already, or are to give hereafter. I ſelect, therefore, out of all theſe of Valſalva, two only; one relating to a long-continued, the other to a ſhort vomiting, but both of them to a vomiting which had fatal events. The firſt of theſe obſervations is as follows.

2. A man of about fifty-four years of age, had begun, five or ſix months before, to be ſomewhat emaciated, in his whole body, when in the beginning of the month of Auguſt, of the year 1689, a troubleſome vomiting came on, of a fluid which reſembl'd water, tinctur'd with ſoot. And the ſame kind of fluid was diſcharg'd by ſtool, ſometimes, when the vomiting was upon the patient, and, ſometimes, when it was abſent, but this diſcharge was not conſtant. In the mean while, ſcarcely any pain was perceiv'd, in the region of the ſtomach. But the phyſician having preſcrib'd ſalt of wormwood, it created ſuch uneaſineſs in the ſtomach, that it was never given afterwards. At length the vomiting being very violent, with a diſcharge of the ſame matter, and the pulſe growing, by degrees, very languid, death took place of life, on the thirteenth of November.

All the limbs of the body were flexible: which does not often occur in other carcaſſes. In the ſtomach, towards the pylorus, was an ulcerated cancerous tumour, and this ſeem'd to be made up of a congeries of glands, which, being preſs'd, diſcharg'd a kind of humour, like the male ſemen And the ſtomach contain'd three pints of a matter, almoſt of the ſame nature with that, which was thrown up by vomiting. Betwixt the ſtomach and the ſpleen were two glandular bodies, of the bigneſs of a bean, and in their colour, and ſubſtance, not much unlike that tumour which I have deſcrib'd in the ſtomach. Theſe were the appearances in the belly.

And in the thorax, the right lobe of the lungs was ſomewhat inflam'd on the poſterior part: but ſerum iſſued forth from both of the lobes, in eve-

ry part, when cut into. From the right ventricle of the heart, polypous concretions went into the pulmonary artery: and a ſmall one from the left, into the pulmonary vein.

3. If you compare, one with another, the two tumours of the ſtomach, I mean this, and that which I alſo deſcrib'd from Valſalva, in the former letter (*a*), both of which he call'd by the name of cancer, in the ſhort references to his obſervations, and has ſaid that both of them had a vomiting attendant upon them, by which a fluid, like water ting'd with ſoot, was diſcharg'd; you will perhaps wonder why the former occaſion'd ſuch ſevere pains, and this ſo ſlight, and why this, as, when preſs'd, it gave out a humour that was not fuliginous, could, nevertheleſs, be able to tinge ſo great a quantity of humour, with that colour. But that a very black matter has been thrown up, even by thoſe who had no tumour of this kind whatever, you will not only perceive from the obſervations of others, but alſo from one of thoſe which will be given below; ſo that it is by no means neceſſary to account for colours of this kind from cancers of the ſtomach, that are become ulcerated.

As to that difference of pains, however, unleſs you account for it, in the firſt patient, from the humours being more irritating, than in this, as the firſt was a pretty old man, and of a bilious temperament, although in the laſt, the pains became very troubleſome, by the taking of ſalt of wormwood; you will conjecture that there had been ſlight pains in this latter patient, at firſt, juſt as there were in the former, but that after the tumour was ſo irritated, by the ſalt of wormwood, as to be at length ulcerated, they not only became more violent, but continued to the very cloſe of life.

4. A nobleman of two and forty years of age, having come out of Germany into Italy, was ſeiz'd a few months after, with a double tertian fever, at Bologna, which was attended with pretty mild ſymptoms, in its firſt acceſſions; but in its fourth acceſſion was very violent indeed. For the cold fit, which began about the twentieth hour, did but juſt remit at the third hour of the night: his thirſt was very troubleſome, his tongue rough, his breathing difficult, he felt a laſſitude, had a ſmall and weak pulſe, a pain, and ſenſe of fulneſs, in the ſtomach, and, finally, ſo great was his reſtleſſneſs, and anxiety, that he ſcarcely remain'd two minutes together, in any one part of the bed.

All theſe ſymptoms continued without any remiſſion, till, the heat coming on more violent, the patient had leave to drink a draught of diſtill'd waters, when they began to abate; but they abated only a little, and for a ſhort time. For ſoon after all the ſymptoms were again exacerbated, and continued violent, through the whole night. Early in the morning he found that he had a vomiting coming on: but, at firſt, he could not excite it even by thruſting his fingers into his fauces; yet ſoon after, he threw up a fluid to the quantity of four pounds, and this fluid was like water, in which chocolate has been diſſolv'd. In this humour floated ſome ſmall portions of membranes, as it were, which had the very ſame colour: and the odour of it was of the ſame kind with that which generally exhales from the bodies of patients labouring under fevers.

(*a*) N. 6.

Though

Though the diſorder of the ſtomach ſeem'd to be ſomewhat alleviated by this vomiting; yet the other diſagreeable ſymptoms not only continued, but were even more violent than before. In the morning the phyſician order'd a a vein to be open'd, and ſome blood to be taken away, and the blood, in the firſt cup, ſhew'd a craſſamentum that was ſofter than it naturally is, a thin cruſt on the upper part; and a milky ſerum around; but in the ſecond, all theſe ſeveral parts of the blood receded leſs from their natural ſtate. This and other remedies being made uſe of, after a few hours, almoſt as much as before, of the fluid I have deſcrib'd, was thrown up by vomiting: and the ſame thing happen'd again, and again, a little time after; ſo that the whole of the quantity, which was thrown up in this manner, on that day, was equal to about ſixteen pints.

The night following, the ſame ſymptoms were violent, a tremor of the left arm coming on beſides; which had a delirium preceding it, and often recur'd, but particularly while the arm was expos'd to the air: and in the morning, degenerated into a kind of epileptic paroxyſm, in which, not only the arm, but the mouth, the eyes, and the left thigh alſo, were extremely convuls'd. Theſe ſymptoms laſted for a great number of hours: at length, that arm was ſeiz'd with a palſy. Nevertheleſs, the epileptic attacks continu'd to return ſo frequently, that more than twenty were reckon'd within an hour. In the mean while, the vomitings were alſo more frequent, by which a matter of a porraceous colour was diſcharg'd, and in this matter fragments of ſmall membranes, as it were, floated.

Moreover, a ſingultus, which had begun after the palſy I mentioned, about noon, began now to be much more violent. And, notwithſtanding all theſe ſymptoms, ſeem'd to be ſomewhat more quiet after dinner, yet, when the evening came on, they were again exaſperated; ſo that the pulſe, and the ſtrength, being more and more decreas'd, through the whole night, and the patient, being troubl'd with gentle vomitings, at one time, at another time, with the delirium, and ſingultus, but ſtill more often, with dreadful, though ſhorter, ſpaſmodic paroxyſms, died at the twelfth hour in the morning.

The abdomen was tumid, as the inteſtines were alſo. Theſe, and the ſtomach, on their more anterior ſurfaces, were ting'd with that ſame colour, with which I ſaid the fluid had been ting'd, that was thrown up by vomiting. The ſtomach was internally inflam'd, all the ſmall veſſels whatever being very turgid with blood. The gall-bladder, although empty of bile, was nevertheleſs ſeen to be very turgid, but this turgidity, was from air.

In the thorax, the right lobe of the lungs adher'd cloſely to the pleura: and this, and the left, were ting'd with a black colour, and full of an ichorous matter. In the right ventricle of the heart was a ſlender polypous concretion.

5. The fatal event, which was indicated by the fourth day in this gentleman, was finally brought on, by the ſeventh. But if before ſo great an impetus of the diſorder had fallen upon the ſtomach, the phyſician, whoever he was, ſuſpecting from ſome diſcoveries of the former days, what was at hand, had made an early, and proper uſe of the peruvian bark, he might, perhaps, have been able to prevent the progreſs of the diſorder, and thus have ſav'd the

the patient. But theſe things happen'd, as far as I can gather from this, and the preceding obſervation, at that time, in which they were as yet afraid of uſing the peruvian bark, by way of a febrifuge, in the manner that we uſe it at preſent, and as it was firſt made uſe of at Bologna ſucceſsfully, a few years after, by that very ingenious phyſician Dominic Gulielmini, in the caſe of a gentleman of a noble family, whom the next exacerbation, of a dangerous fever, would otherwiſe have carry'd off, as it had happen'd to others.

However, from whence the porraceous tincture aroſe, with which the humour thrown up was colour'd, is ſhown by the emptineſs of the gall-bladder. But other juices were mix'd with the bile, in the ſtomach, and inteſtines, before, when the fluid, which was thrown up, had quite a different colour. But with which of theſe colours thoſe viſcera were ting'd, as Valſalva has not made it ſufficiently clear in his papers, I was not at liberty expreſsly to determine, in the hiſtory.

6. But now I will give you other hiſtories, which are likewiſe divided into two kinds, the one relating to vomitings of a long continuance, and the other to thoſe of a ſhort continuance. And of all theſe, that ſhall be the firſt, which produces an example of vomiting, than which not many of longer continuance will be found: and this is the ſame that I remember to have promis'd you, in particular, when I ſpoke of the palpitation of the heart *(b)*.

7. A noble matron of Padua, who, from her very birth, had often thrown up the milk ſhe ſuck'd, ſo that her nurſe deſpair'd of her living; having nevertheleſs grown up to an age of maturity, was married, and became the mother of many children, and being now in her thirty-fourth year, began, in her lying-in, to be frequently troubl'd with a vomiting, from which, after two months, ſhe believ'd ſhe ſhould be free for the future, as ſhe had thrown up a kind of globular body, more than two inches in diameter, which, at that time, conſiſted of a pretty ſoft matter, but, being expos'd to the air, was, after three days, found to be extremely hard.

But the event did not ſucceed to her wiſhes. The vomiting continu'd, and notwithſtanding it was contended with by many phyſicians, for a long time, ſometimes by more mild, and, at other times, by more violent remedies, yet it continued to the very time of her death, that is for four and twenty years together. It return'd every day at two hours after dinner. It did not return after ſupper till the next day in the morning. And although changes were frequently made in the nature of her aliments, it always return'd in the ſame manner, and ſhe always threw up a whitiſh matter, which was thick in its conſiſtence, and ductile. And if the patient endeavour'd to prevent theſe vomitings, ſhe ſuffer'd great uneaſineſſes in the region of the ſtomach, till they return'd, and the matter was diſcharg'd; but this did not happen without conſiderable ſtrainings: however, after vomiting every thing was eaſy, and quiet.

There was no diſcharge from the inteſtines downwards, but by means of purgative medicines: and this could be eaſily brought about, at any time, without any injury to the patient, by a particular remedy, that is by St.

(*b*) Epiſt. 23. n. 21. in fin.

Fuſca's

Fuſca's pills, as they call them at Venice, a few of which, being kept on the ſtomach at night, gently mov'd the Bowels, as they generally do, but ſcarcely brought off any thing, beſides watry diſcharges. Chocolate alſo ſtaid on the ſtomach, and was of uſe to it. If you examin'd the region of this viſcus with your hand, you perceived nothing there that was preternatural, nor yet in the other parts of the belly. To theſe ſymptoms that I have related, was added, about two years before her death, an intermiſſion of the pulſe. Yet the patient did not ceaſe to perform the accuſtom'd duties of life, both at home, and abroad; till finding that ſhe was not quite ſo well, and grown weaker, ſhe was under a neceſſity of paſſing the laſt month of her life in bed. And there, every thing being now nauſeous to the ſtomach, and amongſt others, chocolate alſo, a fever was obſerv'd, which encreas'd every day in the afternoon, and augmented the nocturnal heat, though it made but little change in the pulſe. The pulſation of the arteries was rather large, but according to cuſtom intermittent. As ſhe was extremely coſtive, ſhe beg'd of her phyſician, that he would ſuffer her to take the uſual remedy, that is the pills of St. Fuſca; by which a very great palpitation of the heart was brought on: and notwithſtanding this was alleviated, almoſt immediately, by taking away a few ounces of blood, from the arm, yet it ſoon after grew more violent again, and oblig'd the phyſician to order as many ounces to be taken from the foot, by which it was again diminiſh'd, yet not to ſo great a degree, as to ſuffer her to lie down on the left ſide afterwards.

There was no cruſt upon the top of the blood, that was taken away. Some days after, the patient being again coſtive, a gentle glyſter brought on the palpitation. As external remedies were of no uſe againſt this diſorder, and as but few internal remedies were admitted of, by the circumſtances of the patient, who took ſcarcely any nouriſhment, and that unwillingly, among which remedies were the diſtill'd cherry water, and baum water, and a water made from compoſitions, wherein was a little caſtor, to which was once added a grain of opium, and there being nothing that either prevented the vomiting, or appeas'd the palpitation, the pulſe growing very weak, ſlender, and creeping, on the laſt five days of her illneſs, and the palpitation continuing, ſtools came on without any means having been us'd to excite them, and that even to exceſs, ſo that they were frequent, and in great quantities, but at the ſame time, however, hard. Wherefore, the other ſymptoms continuing, and the extreme parts of the body growing cold, this very worthy matron ceas'd to live any longer, I ſay very worthy, on many accounts, but even for this one inſtance of her humanity, and virtue, ſhe deſerv'd to have enjoy'd a much longer life; I mean becauſe ſhe gave orders, in her laſt moments; which very few women have the virtue and reſolution, to do; that her body ſhould be open'd, in order to find out the cauſe of her obſtinate, and long-continued vomitings, that if it ſhould chance to be found out, it might be of ſome advantage to her children, againſt an hereditary diſeaſe; for ſhe had a daughter, who already began to be affected with the ſame diſorder, and her mother, who had been dead many years, had alſo labour'd under the ſame ſymptoms of vomiting. Being therefore deſir'd in the name of the noble family, by my moſt reſpectable collegue Valliſneri the younger, to be preſent at the diſſection, and having heard all the relation that I have given you, from

that very eminent phyſician Peter de Marchettis, grandſon of Peter the Chevalier, who had attended this matron, for the laſt twelve years of her life, and treated her with the mildeſt methods of cure, as it was proper, in her diſeaſe, that he ſhould; I took care, in preſence of him, and other phyſicians, among whom was the celebrated Dominic Militia, formerly my auditor, that the diſſection ſhould be accurately perform'd, on the evening of the ſame day, on which the patient had died in the morning, that is on the eighth of April, in the year 1744.

The body was emaciated, but not to any great degree, and had no œdematous tumour of the limbs. The belly contain'd a conſiderable quantity of yellowiſh water: the omentum was furniſhed with but little fat, yet cover'd a great part of the inteſtines, and was connected to the peritoneum, on the left ſide: the ſtomach was contracted, and where it began to approach to the antrum pylori, it was ſtill more contracted, ſo as to be, in ſome meaſure, divided into two cavities, as it were; however, in the thickneſs, and colour, of its parietes, if you examin'd it externally, it was natural; but on the inſide, of a red colour, as if from inflammation. In the ſtomach were contained a part of the water, or broth, that had been laſt taken, and ſome pretty thick portions of that viſcid matter, which was wont to be thrown up by vomiting. In the pylorus itſelf, and the duodenum, there was no morbid appearance, beſides the colour of the internal ſurface, which was ſimilar to that I have mention'd in the ſtomach.

The pancreas, which was, in other reſpects, of a proper magnitude, was ſo white, in every part of it, and when I order'd it to be cut into, conſiſted of lobules, ſo diſtinct, and ſo deſtitute of moiſture, that if they had been a little harder, for they were pretty hard, I ſhould not only have pronounc'd, that the pancreas was of a ſcirrhous nature, but that it was, already, quite converted into a ſcirrhus. The ſpleen, and the liver, were internally ſound, although the former, on its whole external ſurface, and the latter, on its inferior ſurface, on the right ſide, were pale. But the gall-bladder had all its parietes ſo much thicken'd, that I never remember to have ſeen the like: for which reaſon, notwithſtanding it was full of bile, inaſmuch as it was in a perſon, who, for ſo many days together, had taken very little nouriſhment, and notwithſtanding this bile was ſo black, as to have ting'd the interior ſurface of the gall-bladder with a black colour; yet the external ſurface of it was white. For the ſame reaſon that I hinted at juſt now, in the contraction of the ſtomach, the inteſtines, and particularly the ſmall ones, were contracted alſo, to a very great degree, as even that exceſſive evacuation, by ſtool, which had ſo lately preceded, required. Out of all the inteſtines, the appendicula vermiformis alone, was a little more turgid than uſual, and red on the external ſurface. In the meſentery, and the other parts of the belly, we obſerv'd nothing that was not natural.

But in the thorax, water was contain'd on both ſides, and not in ſmall quantities, nor a little bloody. The lungs, in like manner, though in other reſpects ſound, were connected to the ſides of the thorax, by many thick, and pretty long membranous filaments. The pericardium adher'd, very cloſely, to all the ſurface of the heart, to that of the right auricle, and of the large veſſels belonging to the heart. Nevertheleſs, the heart had a proper thickneſs in its

parietes, and a proper capacity in its ventricles. Both of theſe cavities were, likewiſe, full of blood, ſuch as iſſu'd, in great quantity, from the vena cava, when cut into, black, and in great meaſure coagulated, and grumous, but without even the leaſt polypous concretion. The valves that are plac'd at the venous orifices of the heart, although they ſeem'd to be white, were not however indurated. But out of the remaining valves, thoſe that are ſituated at the beginning of the great artery, had their extreme borders not only much thicken'd, but of a cartilaginous hardneſs. The artery itſelf was in a very natural ſtate, both internally, and externally: nor did any other marks of diſeaſe appear in the thorax, beſides thoſe which I have mention'd. There was no reaſon for us to go through a diſſection of the head.

8. As to the diſorders that were found in the pericardium, and the heart, how far they may relate to palpitation, and an intermittent pulſe, I have already hinted in ſeveral places *(c)*. But thoſe which were found in the gall-bladder, and the pancreas, ſeem to me to have a reference to the vomiting. And perhaps I ſhould think the ſame, alſo, of that contraction of the ſtomach, by which it ſeem'd to be divided into two cavities, as it were, if I had not deſcrib'd the ſame ſtructure to you, in two other women *(d)*, neither of whom had been ſubject to a vomiting, nor yet a woman of princely rank, and others beſides *(e)*, in whom I remember that the ſtomach had the ſame appearances.

For it happen'd to me, when I ſaw this conformation of the ſtomach, to ſee it in women, as it did alſo to Valſalva *(f)*: from whence I began to ſuſpect whether theſe appearances might not be reckon'd among the other diſadvantages, that they create to themſelves, by compreſſing the upper part of the belly with hard ſtays, if I had not obſerv'd that the ſame thing happen'd to women of every ſtation, and not only in women, but even in men, as has been obſerved by Riolanus (*g*), and by the very celebrated authors, Heiſter (*h*), and Fantonus (*i*). And not one of thoſe obſervers, nor yet the celebrated Petſchius (*k*), and Amyandus (*l*), who have ſeen it in women, have ever mention'd a word of vomiting, in theſe men, or women, though they might have mention'd it, and indeed ſome of them ought, in juſtice, to have mention'd it, if any thing of this kind had been obſerv'd.

And though you will find, in this eighth ſection of the Sepulchretum, an obſervation of Blaſius (*m*), who met with the ſtomach double, in a man who had been long troubl'd with very frequent vomitings, you nevertheleſs will ſee, that he did not aſcribe the vomitings to this double ſtate, but to the great narrowneſs of the foramen, whereby one ſtomach communicated with the other: which kind of narrowneſs never was found, in thoſe that I have obſerv'd. But if you read this obſervation in Blaſius (*n*), you will find it to be join'd with another of the ſame kind, in which, although there was, not only a great narrowneſs betwixt the two ſtomachs, but " a very great and

(*c*) Epiſt. 23. n. 21 & 23 & alibi.
(*d*) Epiſt. 16. n. 38 & epiſt. 26. n. 31.
(*e*) Epiſt. 37. n. 28.
(*f*) Epiſt. 36. n. 2.
(*g*) Anthropogr. l. 2. c. 20.
(*h*) Diſſ. ſiſt. obſ. med. miſcell. obſ. 6.
(*i*) De obſerv. med. & anat. epiſt. 3.
(*k*) Syllog. anat. obſ. §. 84.
(*l*) Vid. commerc. litter. a. 1734. hebd. 25. in fin.
(*m*) N. 26.
(*n*) P. 4. obſ. med. 9.

" exceſſive ſtreightneſs," the man was nevertheleſs, except his being very hungry, " in very good health," and conſequently not ſubject to vomitings.

Yet if you would chooſe to ſuppoſe, that this ſtructure of the ſtomach, in the matron whoſe hiſtory I have now given you, had alſo contributed ſomething to the production of the vomitings, inaſmuch as it had, without doubt, exiſted from the firſt formation of the ſtomach, join'd with that deprav'd diſpoſition of the gall-bladder, and the pancreas, which becoming more evident, as the patient encreas'd in years, brought on an incurable vomiting; I ſhall not violently conteſt the opinion with you. And there is not the leaſt doubt, but ſo great a thickneſs in the coats of the gall-bladder, render'd it leſs obſequious to the preſſure of the ſtomach, and the firſt inteſtines, ſo that, probably, a ſufficient quantity of bile was not preſs'd out from thence, and this bile was likewiſe vitiated.

And as the pancreas was without any moiſture, and inclining to the nature of a ſcirrhus, you may eaſily imagine, how much leſs juice it muſt, of courſe, ſecrete, and how much leſs fit that juice muſt be for the purpoſes to which it was intended, and you may, at the ſame time, gather, how imperfect an elaboration of the chyle there muſt have been, from the defect of both theſe humours, and the diſorder in the duodenum, and how much groſs, and viſcid, matter muſt, conſequently, ſtagnate there, which would irritate the coats of that inteſtine, in ſuch a manner, and particularly in the motions, and agitations, of the body by day, as at length, to ſtir them up to an inverted motion. And if to theſe you are allow'd to add that peculiar ſtructure of the ſtomach, which was, perhaps, not quite ſo proper to prepare, and act upon, the aliments, or at leaſt to thruſt them on, with ſufficient diſpatch, into that inteſtine, it will be ſo much the more eaſy to conceive the cauſes of this very obſtinate, and long-continu'd, vomiting.

9. But to ſpeak of one of theſe cauſes only, for the ſake of brevity, that is, of the diſeas'd ſtate of the pancreas, you will ſee here in the Sepulchretum, beſides the fifty-third obſervation, and thoſe that follow, others, alſo, that are pointed out, and that not only above, but in particular below, under numbers fifty-ſeven (*o*), and fifty-eight (*p*), and other numbers; and you will find that a vomiting was join'd with the diſorders of the pancreas. It is true, I am not among the number of thoſe, who have ſuppos'd, that I know not what diſeaſes, and even vomitings of blood, are to be accounted for, from " the pancreas alone" (*q*): and I even confeſs, that this viſcus has been found to be diſeas'd by me, and by others, without a vomiting being the conſequence of it. Yet I cannot deny, that diſorders of the pancreas have been ſeen, by me, to be join'd with vomitings, and that I have heard from others of the ſame thing having been ſeen, frequently, by them alſo.

But I ſhall have a more convenient opportunity to give my obſervations hereafter. At preſent I ſhall take notice of ſome obſervations from others. And in the firſt place, I heard from a follower of Malpighi, who was, when living, a learned phyſician at Bologna, and my preceptor, I mean Jacob Sandri, that he had made remarks upon many diſſections of perſons who had

(*o*) §. 5. 7. (*p*) §. 2. 4. (*q*) Vid. ibid. obſ. 74. in fin.

been ſubject to vomitings, and particularly of a humour reſembling tobacco in its colour; and that in all theſe bodies the pancreas had been in a diſeas'd ſtate. And Heraclito Manfredi; he whoſe praiſes I have already, with juſtice, proclaim'd; when I return'd to Bologna from Forli, the place of my nativity, where I had retir'd for ſome months, which I think was in the year 1704, related to me an obſervation of his: which I will here communicate to you; and that, rather, becauſe it relates to the diſcourſe which I have begun upon the pancreas, than to the order which I promis'd to obſerve.

10. A robuſt man, without any manifeſt preceding cauſe, was troubl'd with a continual endeavour to vomit, yet beſides his medicines, and his food, none of which he could retain, he vomited but little at a time, and ſeldom, and what he did bring up was watery, and for the moſt part bitter. Beſides this, he was troubl'd with a great thirſt, with a kind of frequent ſwoonings, and, in particular, with a pain, juſt as if he were torn to pieces by dogs, at the common boundaries of the thorax and belly: which, if you examin'd it with the hand, had not the leaſt hardneſs, or reſiſtance, whatever. With theſe ſymptoms, and with a low pulſe, he died within the eleventh day.

The belly being open'd, the liver appear'd to be very large, but ſound. The inteſtines, likewiſe, and the ſtomach, were ſound. And the meſentery, alſo, though not without ſome obſtruction. But the pancreas was larger than its natural ſize, and univerſally unequal, with roundiſh tubercles of a conſiderable magnitude, and was itſelf almoſt of a cartilaginous hardneſs. In the thorax was much water, and in the pericardium, a very large quantity, like to that in which freſh meat has been waſh'd. The heart was very ſmall: and in its right auricle was ſomething of a whitiſh polypous concretion.

11. The reaſon that tumours of the pancreas, unleſs they themſelves are perhaps large, and the patient very much emaciated, are ſeldom perceiv'd by the touch externally, or, at leaſt, not without difficulty, ariſes from the remote ſituation of the viſcus, and from the interpoſition of whatever may lie betwixt that, and the hand, and eſpecially from the ſtomach being turgid with flatus, or from the liver, as in this man, being much enlarg'd in its ſize. And as, in caſe of this difficulty, Riverius has hinted what ſigns we may make uſe of(*r*), ſo he has not omitted, in the number of theſe, ſuch as are to be taken from the pain of the neighbouring ſtomach, and from other ſymptoms. However, the pancreas may excite a vomiting, in many different ways, as when it irritates the contiguous ſtomach, which is of a peculiarly exquiſite ſenſe, by its hardneſs, and roughneſs, or, by an encreas'd magnitude, prevents it from being ſufficiently dilated.

For the diſcharge of all the ingeſta, by vomiting, is the natural conſequence of the impeded dilatation of the ſtomach, whether this viſcus be the cauſe of the obſtruction to its own dilatation, by reaſon of its coats being become much thicken'd, and ſcirrhous, as in the obſervations of thoſe celebrated authors, Laubius (*s*), and Haller (*t*); or whether, for the thing comes juſt to the ſame, there are other obſtacles oppos'd to the dilatation thereof, as, for inſtance, large ſteatomatous tumours, which Verdrieſius (*u*) ſaw lying

(*r*) Prax. med. l. 13. c. 4.
(*s*) Eph. n. c. cent. 7. obſ. 41.
(*t*) Opuſc. pathol. obſ. 21.
(*u*) Eph. cit. cent. 6. obſ. 16.

near the ſtomach, or that large body, which, as you will read in the very excellent Heiſter (*x*), was likewiſe found in the ſame ſituation, in two women. And that the viſcera themſelves, which are contiguous to the ſtomach, may alſo be obſtacles to its dilatation, if they are immoderately ſwell'd and hard, was prov'd ſome years ago, by the untimely death of a moſt learned archiater, who was my worthy friend, and whoſe incurable vomiting I heard was owing to the liver, and the pancreas, which, by their bulk and hardneſs, compreſs'd the ſtomach, that lay betwixt them.

But the pancreas; to go on to ſpeak of that in particular, eſpecially as it is ſo eaſy to transfer thoſe things that are ſaid of this viſcus, to the liver alſo; the pancreas, I ſay, may excite vomiting, even when it ſecretes a juice, which, either by its acrimony, is troubleſome to the duodenum, or by its inactivity, or any other defect whatever, is the cauſe of a bad concoction of the aliments, and conſequently, of ſome groſs parts thereof being left behind, to create uneaſineſſes in that inteſtine; or finally, when by the ſmallneſs of its quantity, it is unequal to the other uſes, and among theſe, to that by which it moderates the force of the bile, that flows in with it, particularly when the bile is more acrid than uſual, and prevents it from ſtimulating the coats of that inteſtine, too ſtrongly, and inverting their motion: on which ſubject you may, alſo, conſult Frederic Hoffmann (*y*), who ſuppoſes, this to have been the very reaſon, why the bile, and the pancreatic juice, are wont to go to that inteſtine, by one and the ſame orifice, and why the dogs of Brunnerus, when the pancreas was taken away, died of bilious vomitings. Therefore when the human pancreas is reduc'd to ſuch a ſtate as to ſecrete no juice at all, you ſee very clearly how much more eaſily thoſe things that I have ſaid may be the conſequence. But a vomiting may be alſo brought on in a different manner by the pancreas, that is, if by its roughneſs, hardneſs, or encreas'd magnitude, it irritates, or preſſes upon, the inteſtine we have been ſpeaking of (to which it is fix'd by its broader extremity) in the ſame manner as I have ſuppos'd of the ſtomach.

According to theſe poſitions, or others of this kind, you may, at your leiſure, explain all, or the greater part of all, the hiſtories that relate to this ſubject, and much more thoſe which have a diſorder of the pancreas, and the duodenum, join'd together at the ſame time, as this that I ſhall immediately ſubjoin, which was taken by that very experienc'd diſſecter, our Mediavia, about the beginning of October, in the year 1733, and communicated to me at the very ſame time.

12. A monk, who was noble both in his birth, and his manners, and one of the holy family of the capuchins, as they are commonly call'd, was carry'd off by a complication of diſorders, but particularly by a dropſy, and a vomiting, when he was in the thirty-third year of his age.

There was ſome water under the ſkin of the carcaſe univerſally; for which reaſon the feet, alſo, were ſomewhat œdematous. But the belly was not greatly ſwell'd, nor had it any greater quantity of water, within its cavity, than about two pints. The liver and the ſpleen were larger than they naturally are, and the former of theſe viſcera was whitiſh beſides, and hard, and its lobules conſpicuous.

(*x*) Epiſt. de pilis, oſſib. p. n.

(*y*) Diſſ. de pancreat. morb. §. 4.

ſpicuous. In the ſtomach was nothing worthy of remark, if you except a plexus of two inches in breadth, and four inches in length, made up of crowded glands, leſs indeed than a lentil, but furniſh'd with an evident orifice: that plexus was in the bottom of the ſtomach, near the antrum pylori. At the diſtance of an inch below the pylorus, the duodenum was black, and a little below that, was ſcirrhous. The pancreas alſo was pretty hard.

In both the cavities of the thorax, was a conſiderable quantity of water. The lungs were contracted. The heart was not without polypous concretions: and one of its valves not without a bony portion. But on the internal ſurface of the great artery, from the ſuperior branches quite to the emulgents, were beginnings of future oſſification. This artery, though in a body of a tall ſtature, was ſcarcely thicker than a finger of a moderate ſize: and the other ſanguiferous veſſels, alſo, were narrow in the ſame proportion.

13. As this great narrowneſs of the veſſels, and particularly in a body of this kind, had probably been the beginning of all its diſeaſes, ſo I do not doubt, but that the hardneſs of the pancreas, and ſtill more of the duodenum, had been the cauſe of the vomitings. For whether that inteſtine is ſtreighten'd by compreſſion, as was formerly obſerv'd by Riolanus, whom you will ſee quoted here in the Sepulchretum (z), or whether, by reaſon of its coats being ſcirrhous, it is not able to conſtringe itſelf, the ſame effect follows, notwithſtanding the cauſes are ſo oppoſite, that is the ingeſta, which were about to be carry'd out of the ſtomach, as they are receiv'd into the inteſtine with leſs eaſe, or propell'd forwards with more difficulty, remain, the greateſt part of them, in the ſtomach, and being there corrupted, or heavy, by the very delay itſelf, grow troubleſome to the ſtomach, and bring on a vomiting, a very clear example of which has been even produc'd by the celebrated Molinelli *(a)*.

The ſame thing muſt happen, when the pylorus is affected with diſorders of the ſame kind. And you have, here, many examples in the Sepulchretum, as in the eleventh and ſeventeenth obſervations, and the greater part of thoſe that follow, almoſt quite to the twenty-ſixth, and again in the fifty-ſixth, article the thirteenth, and in the additamenta, obſervations the firſt and eighth; and indeed in other places, as in book the firſt, ſection the ninth, and not only in the thirty-fourth obſervation, but, moreover, if you attend to thoſe *ſubverſions*, in the thirty-third. And among theſe that you will read in this eighth ſection, when you come to the twenty-firſt obſervation, which is not far unlike another from Johannes Bohnius (*b*), and find in that a vomiting of all the food, which was taken in, and death itſelf at length brought on, within ten days, by the pylorus being ſtop'd up, from a ſmall piece of ſilver coin, which the patient had ſwallow'd down; it will, without doubt, make you call to mind that piece of ſilver coin, which was of a much larger ſize, and which the experienc'd ſurgeon du Luc (*c*) happily diſlodg'd from thence, and even carry'd quite out of the body, not only by the help of other remedies, but, particularly, by the weight of quickſilver, urging it

(z) Schol. ad obſ. 23.

(*a*) Comment. de bonon. ſc. acad. t. 2. p. 1. inter medica obſ. 1.

(*b*) Eph. n. c. cent. 3. & 4. obſ. 121. in ſchol.

(*c*) Hiſt. de l'acad. r. des. ſc. a. 1740. obſ. anat. 4.

down, and by means of this laſt-mention'd metal *amalgamating*, as the phraſe is among chymiſts, with the ſilver, whereby its ſize was diminiſh'd, notwithſtanding ſlight pains, at the pylorus, had already begun to appear, together with an inclination to vomit.

But not to digreſs too far from theſe obſtructions of the pylorus, which are produc'd by diſeaſe, and not by accident, beſides thoſe obſervations which I have pointed out in the Sepulchretum, there are others, and thoſe not few in number, which you may add thereto, as thoſe, for inſtance, that are extant in the volumes of the Cæſarean academy (*d*), in the Acta Eruditorum Lipſienſia (*e*), in the Commercium Litterarium (*f*), and any others beſides, amongſt the great number taken notice of by the very learned Trillerus (*g*). Out of all theſe obſervations, you will find ſome which, at the ſame time, confirm thoſe things, that I hinted juſt now, when I ſpoke of the pancreas, and the duodenum, and ſome that even refer to the letters, which I have lately ſent you. Of this kind are two even of the celebrated Fantonus (*h*), that ought by no means to be paſs'd over here.

Nor, finally, am I wanting in obſervations of this kind, although they are not ſo extraordinary as the ſecond of his is: one of theſe I have already given you, in the preceding letter (*i*), and for that reaſon ſhall not repeat it here: but another, which I made on the biſhop of Breſcia, I defer till I give you thoſe that relate to tumours of the belly (*k*): and a third, that was communicated to me by Marianus, whom I have elſewhere commended, in which calculi, and callus, ſo cloſely ſhut up the pylorus, that it could not be pervaded, even by mercury, I ſhall ſend to you when I have receiv'd the whole of it. There is one obſervation, which may be produc'd here, without any great impropriety: it was taken at Bologna, in the year 1703, about the beginning of December, and I purpoſely preſerv'd it for the preſent occaſion, notwithſtanding it agreed, in part, with another ſubject alſo, as you will perceive by the obſcurity of the pulſe, join'd with the greateſt laxity of the fibres of the heart.

14. A prieſt of the famous order of St. Auſtin, whoſe name was far from being obſcure, among the number of ſacred orators, being ſomewhat more than forty years of age, began, after cloſe ſtudies, journeys, and other fatigues, to perceive a kind of tenſion, at the right hypochondrium, and this ſome months before any other ſymptom diſcover'd itſelf. At length a frequent vomiting came on, four hours after taking food. And other ſymptoms were of courſe added. Finally, in the laſt months of his illneſs, the caſe was as follows.

In the belly was great hardneſs, and in the right hypochondrium very great hardneſs; but no pain if you preſs'd upon theſe parts, whereas, on the contrary, a ſpontaneous pain aroſe in the other hypochondrium, and that very violent indeed, at the time the food was about to be digeſted. A humour was ſometimes thrown up, which was ting'd with the colour of tobacco, as

(*d*) Cent. 7. obſ. 87. & cent. 8. obſ. 20. & cent. 10. obſ. 10. & act. t. 4. obſ. 107. & 135. & t. 6. obſ. 151.
(*e*) A. 1711. m. ſept. ex Dionis diſſert.
(*f*) A. 1743. Hebd. 16. n. 2. cum Hebd. 17. n. 2.
(*g*) Diſſert. de fame lethali, &c. §. 29.
(*h*) De obſ. med. & anat. Epiſt. 2. & 3.
(*i*) N. 6.
(*k*) Epiſt. 39. n. 21. & ſeq.

it

it were, but the diſcharg'd fluid was, at other times, much more brown, and black, and ſometimes, again, of a various colour, and in the greateſt part of it, different from theſe: and ſome perſons did not even ſcruple to ſay, that they had not only ſeen mucous concretions, in this ejected humour, but even that they had obſerv'd pieces of real membranes, as it were, ſwimming therein. Theſe gentlemen, therefore, thought that the patient ought not haſtily to give up the uſe of turpentine reſin, as it was the only remedy that the ſtomach would retain, when all others were thrown up. But pills of aloes, gum ammoniacum, and vitriolated tartar, as it is call'd, which another phyſician had propos'd, they diſapprov'd; though the patient himſelf, conceiving great hope from the effect of ſtools, as moſt patients do, eagerly deſir'd them. Theſe pills, therefore, being taken, very great vomitings were the conſequence of them, and from that time every thing began to grow worſe and worſe. For the pulſe which had been before obſcure, was now extremely ſo, and there was a fever like unto a lipyria: and the urine was ſuch as it is in a jaundice. Within a few days, therefore, the feet being ſomewhat affected with an œdematous ſwelling, and the pulſe being quite gone, the patient reach'd the cloſe of life, without any conſiderable difficulty of breathing, or any perturbation of mind.

When the abdomen was open'd, the liver was found to be exceedingly large, full of ſteatomata, and of a ſubſtance lying betwixt them, which reſembl'd the thymus when boil'd, white, lobular, and hard. In the gall-bladder, together with a livid bile, were nine calculi, of different forms from each other, every one of which, at firſt, inclin'd to a green colour, but, after being dried, became yellow. The ſpleen was very ſmall, ſo as ſcarcely to exceed the ſize of that ſilver coin, which we call a crown. The pancreas was ſo extenuated that it ſeem'd at firſt to be wanting. The ſtomach was, internally, diſtinguiſh'd with black ſpots: in other places it was flaccid, but in the pylorus it was callous, ſo that it could not yield properly, and be ſufficiently dilated.

The viſcera of the thorax were, alſo, flaccid and lax; ſo that the fleſh of the heart could eaſily be drawn into pieces, by the hand. Beſides theſe appearances nothing morbid was obſerv'd; ſo that there was no extravaſation of any kind of moiſture, either in the thorax, or belly.

15. Whether the ſpleen happen'd to be very ſmall, in this prieſt, from the original formation, as is perhaps the moſt probable, or whether the courſe of the blood being diverted by the hepatic artery, from the ſplenic, into the enlarg'd liver, caus'd an extenuation of the ſpleen, and of the pancreas, at the ſame time, or finally, whether the bulk of the liver being encreas'd more and more, together with its weight, and hardneſs, brought on this extenuation; you plainly ſee, that neither the liver could have ſufficient aſſiſtance from ſuch a kind of ſpleen, for the ſecretion of the bile, nor the duodenum a ſufficient quantity of juice, to attemper the bile, from ſuch a kind of pancreas. The nature of the bile, therefore, being chang'd, for this reaſon, but ſtill more on account of the diſorders of the liver, which even the colour of it, and the calculi that had form'd themſelves in the bladder, demonſtrated, conſequently, the chile, and the blood, being chang'd, and the humours that are ſecreted from it, not only in other places, but particularly in the

ſtomach,

ſtomach, the inteſtines, and the pancreas, it is by no means difficult, clearly to underſtand the origin of thoſe things that happen'd to this patient, but eſpecially of this very great variety of colours, which appear'd in the matter that was thrown up. For it is not ſurprizing, if preternatural colours ariſe from humours, which recede much from the ordinary appearances of nature; nor yet, if from the various ſecretion, mixture, and delay, of all and of each of them, in conſequence of thoſe diſeaſes, and the ſtrainings to vomit, at one time theſe colours, and at another time thoſe, more particularly, ariſe. It is rather ſurprizing, if at any time, in thoſe who have ſhown no mark of deprav'd ſecretions of this kind, a vomiting be ſuddenly brought on, of any juice ting'd with ſuch a colour, as you would by no means expect. An obſervation of this kind, is that which was communicated to me by letter, in the year 1718, from the ſame perſon, whom I mention'd above (*l*), I mean the very learned Manfredi. This obſervation, however, relates to vomitings of ſhort continuance, as you will immediately ſee.

16. A man, who was by trade a ſmith, went out from home in the morning, with a very ſlight pain of his ſtomach. Which growing very violent ſoon afterwards, the patient began to throw up a humour extremely ſimilar to ink, and before evening he died.

The ſtomach contain'd two pints of a humour equally black, inodorous, and grumous. The internal ſurface of the duodenum was, almoſt univerſally, and the ſtomach, univerſally, ting'd with the ſame colour. The external coat of the ſtomach, alſo, on that part where it is turn'd towards the diaphragm, had a very black ſpot, of four inches in extent, every way: and it was ſurprizing, that the intermediate coats were no where ting'd with any other colour but that of tobacco, even in the parts thereof, that lay under this black ſpot, ſo that there they themſelves were not black, notwithſtanding they were intercepted, on both ſides, with a very black colour.

17. This ſpot was perhaps of a gangrenous nature. And the only thing that prevents me from believing the internal blackneſs of the ſtomach, and the duodenum, to have proceeded from the ſame cauſe, is that humour, ſo exceedingly ſimilar to ink, which was found in the ſtomach, and in part had been thrown up, and which was, of itſelf, ſufficient to tinge theſe viſcera, in that manner. And if you imagine this humour to be atra bilis, you will be the leſs ſurpriz'd at the patient's death, when you call to mind the aphoriſm of Hippocrates (*m*), who foretells death to any perſon whatever, who, to make uſe of the tranſlation of Celſus (*n*), "has a diſcharge of atra "bilis, in a recent diſeaſe, either by vomiting, or ſtool."

But from whence could this very great blackneſs ariſe? could it be from the bile, which was of itſelf very black, being extravaſated into that inteſtine? For you may ſee in the obſervations of the celebrated Budæus (*o*), and Schoberus (*p*), that the gall-bladder was very large, and turgid with the ſame blackiſh matter, which the patients had thrown up by vomiting. Was the bile which had grown already blackiſh, made to much the more black, by

(*l*) N. 9.
(*m*) 22. ſ. 4.
(*n*) De medic. l. 2. c. 6.
(*o*) Eph. n. c. cent. 1. & 2. obſ. 105.
(*p*) Earund. cent. 3. & 4. in append. n. 12. c. 1.

ſome

ſome other humours being mix'd with it, in that inteſtine? Or was ſomething black alſo, added to it by the blood, which flow'd out from the ſmall veſſels, that were eroded during the very violent pain? Take care how you ſuppoſe all this humour to have been blood. For a blunder of this kind could not poſſibly happen, to ſo accurate, and experienc'd, an obſerver: nor, indeed, was the quantity of the humour diſcharg'd, if we ſuppoſe it to have been blood, ſufficient to have deſtroy'd the patient, in ſo ſhort a ſpace of time. And even Hoffmann himſelf (*q*), deſcribing a young man who died with black vomitings, and ſtools, notwithſtanding it appear'd in the ſtomach, that many ſanguiferous veſſels were ruptur'd, did not, nevertheleſs, account for his death from the effuſion of blood, which does not deſtroy ſo ſuddenly, even when greater, but from the putrefaction of the blood infecting the brain: and in his patient, death had not follow'd within a few, as in the preſent caſe, but within four and twenty hours, and the matter which had been thrown up, and that found in the ſtomach after death, were both of them, inſtead of being without any ſmell, intolerably fœtid.

Nor was the matron of Budæus, nor the merchant of Schoberus, notwithſtanding the latter was carried off in much leſs time than the former, ſnatch'd away by ſo ſpeedy a fate, as the ſmith of whom I am ſpeaking, and yet they had vomited up corrupt and fœtid matter, and in ſo great a quantity, that only a little blood remain'd behind in the veſſels. But of what nature this blood was while they were living, not only the foregoing ſymptoms, but the internal gangrenes which were found after death, and other things, clearly ſhow'd. Yet in regard to ſuch a kind of blood, that either increaſes, more than others, that black humour, which the ancients called atra bilis, or degenerates into it, you may read what two very learn'd Archiaters have written upon the ſubject, I mean Schoberus whom I have already quoted (*r*), and the illuſtrious Vanſwieten, who is much more full, and clear, upon this head (*s*).

And you will believe that Hoffmann differs from them only about a name, when you have attentively read the caſe, and diſſection, of the young man I have ſpoken of, and thoſe of a woman ſoon after (*t*). For he deduces the black vomitings, of both theſe patients, and their black ſtools, from blood indeed, but from that which was putrid, and fœtid, and explains the more ſpeedy death of the young man, "in the ſame manner as he would that, "of thoſe who are affected with a ſphacelus of the external parts only;" for the ſpirits of the brain, and of the nerves, being infected by a blood of this kind, "they ſuddenly loſe their ſtrength, and their life." But if there was any other humour in this ſmith, it was certainly the moſt pernicious, and of the moſt deſtructive properties, by whatever name we may call it, or, rather, it was the reſult of ſuch a mixture of humours, as may be compar'd with an in-bred poiſon. For it is not in the power of every black juice to bring on ſuch violent tortures in the ſtomach, or to ſnatch off the patient by ſo precipitate a death: and this you will alſo learn, from the preceding ſeventh ſection of the Sepulchretum, when you read, that after a pain of the ſtomach,

(*q*) Medic. rat. t. 4. p. 2. ſ. 1. c. 3. obſ. 2.
(*r*) Append. cit. c. 2. §. 5. & 6.
(*s*) Comm. in Boerh. aph. §. 1091. & ſeq. paſſim.
(*t*) C. 3. cit. obſ. 3.

this cavity was found to be " half full of a black juice (*u*)," or that in the fundus of it was " a matter like ink (*x*)," and other things of the ſame kind.

18. Mention being made of bloody vomitings, and poiſon, you will perhaps aſk me, why I produce no examples of real blood being diſcharg'd by vomiting, nor any inſtances of that which is the conſequence of moſt poiſons, that are drunk, or ſwallow'd; eſpecially as in this eighth ſection of the Sepulchretum, ſo many of each kind are produc'd? But to what time I defer conſidering the effects of poiſon, I have declar'd near the latter end of my laſt letter (*y*). And the obſervations of bloody vomitings, except that which is given in the ſame letter (*z*), remain to be given in other epiſtles, and on more proper occaſions. And there, perhaps, I ſhall not ſcruple, to declare, what we ought to think of the greater part of thoſe obſervations, which, in this ſection, deduce the blood, thrown up by vomiting, from the ſpleen. For thoſe which account for it, as coming from the lungs (*a*), are given with ſuch a confeſſion, at leaſt, as gives you to underſtand, that they are not ſuitable to this ſection: which confeſſion, however, is wanting in that place, where a vomiting of pus is deriv'd from a large vomica of the lungs (*b*). There is, on the contrary, where what was a true vomiting, as ſimilar ſtools, about the ſame time, demonſtrated, I mean of blood, mix'd " with pieces of fleſh," or in other words, with polypous concretions, is accounted for, as coming, by divine permiſſion, " from the heart, through " the lungs, and the aſpera arteria (*c*)!" and for what reaſon? why becauſe the heart was found to be " fill'd with the ſame kind of matter," as was thrown up by vomiting.

Nor do I imagine you will expect from me, in this letter, thoſe obſervations, which, notwithſtanding they have a vomiting attending upon them, properly belong, either to the iliac paſſion, and thoſe hernias that are call'd incarcerated, or to wounds of other parts, and in particular, of the ſtomach itſelf, or to other diſorders of ſome of the viſcera, with which the ſtomach conſents. For I do not doubt but you clearly underſtand, to what occaſions all the obſervations of this kind ought to be defer'd: and indeed you will obſerve, that moſt of the obſervations of this kind, are produc'd in ſuch a manner, in this ſection, that we are expreſly refer'd to other ſections, where they are copied more at large. But beſides a pretty great number of theſe, others may alſo be added, that are ſet down twice over in this ſection: and this you will perceive, by comparing the twenty-ninth obſervation, with article the fifth of the fifty-ninth, the thirty-eighth, with the forty-third, article the firſt, and the fifty-ſeventh, article the ninth, with the ſixth of thoſe you read in the additamenta, and perhaps others; and you may ſuppoſe the ſame thing to have been ſaid of the ſcholia, in which obſervations are repeated, as thoſe that are ſubjoin'd to the firſt, and the third, will ſhow, if compar'd with the ſcholia added to the thirteenth, and, in like manner, to the fifth; and perhaps the ſame may be remark'd of others.

(*u*) Obſ. 23.
(*x*) Obſ. 26. §. 1.
(*y*) N. 21.
(*z*) N. 12.
(*a*) Obſ. 75. §. 1. & 2.
(*b*) Obſ. 65.
(*c*) In additam. obſ. 10.

19. When

19. When I read over that firſt obſervation, which I juſt now mention'd, and thoſe things which are upon the ſubject of throwing up polypous formations by vomiting, and on the ſubject of vomiting, in conſequence of diſeaſes of the parts that conſent with the ſtomach; ſome things were brought back to my mind which, if I add them here, you will perhaps not read with reluctance. Willis then, in this obſervation, affirms that "if a conſtant ſuffuſion of bile happen, in the parts that are near to, or in contact with the ſtomach," a frequent "vomiting is excited," becauſe the external coat of this viſcus is, for that reaſon, frequently, and greatly, irritated, and that "he had obſerv'd this in many who were diſſected after death." And I not only believe that this may have been ſeen by that very excellent man, but even confeſs, that there may be ſometimes ſuch an acrimony of the bile, and ſuch a power of irritating, and penetrating, as to make it the accidental cauſe of vomitings, eſpecially in thoſe perſons, who are endow'd with a very exquiſite ſenſe; and if the tincture of the bile extends itſelf very far, and reaches to the interior parts of the ſtomach: which Platerus, as you have it in the preceding ſeventh ſection, of the Sepulchretum (*d*), has particularly obſerv'd in thoſe "who, when living, were troubled with continual heats of the ſtomach."

Yet there is more than one reaſon which has ſome influence in preventing my aſſent. For in the firſt place, I doubt, whether the particles of the bile that tinge the parts which lie round the gall-bladder, eſcape from thence while the perſon is living, or only after death, where the reſiſtance of the coats is leſſen'd, and the interſtices which lie betwixt fibre and fibre, are relax'd. And in the next place, I have ſo frequently ſeen the neighbouring parts of the gall-bladder have a yellow hue in dead bodies, as I have likewiſe ſaid in the preceding letter (*e*), that it does not ſeem to be the cauſe of any peculiar injuries to ſome perſons, but the cauſe of thoſe which are common to moſt perſons while living. Finally, unleſs it be certain; and it is by no means certain; that when theſe gentlemen have aſcrib'd ſuch a tincture in that place, there was nothing elſe in the bodies, to which either the ſenſe of heat, or the vomitings, might be imputed; there is a very great propriety in doubting, whether theſe effects are to be aſcrib'd to that cauſe. An inſtance of this kind, which confirms the propriety of doubting, I will give you in a little whelp that I diſſected, when I was a young man at Bologna. For it is much to our preſent purpoſe, and I ſee that obſervations taken from dogs, are not only produc'd in other parts of the Sepulchretum, and that frequently, but particularly in this very ſection (*f*).

20. A young whelp died ſuddenly after great vomitings. The antrum pylori, where it was contiguous to the gall-bladder, I found to be ting'd with a yellow colour, which had reach'd from the outer coats, quite to the inner; it ſtop'd, however, at the internal coat, ſo that the matter which was contain'd in the ſtomach, reſembl'd even the white of an egg, in its colour. While I was enquiring whether there was any thing elſe which deſerv'd remark, I ſaw that a part of the centrum tendineum of the diaphragm, was likewiſe yellow, which being very thin, and particularly, in that tender age,

(*d*) Obſ. 16. (*e*) N. 13. (*f*) Obſ. 68.

had tranſmitted this yellowneſs into the cavity of the thorax, in ſuch a manner that ſome ſmall contiguous part of it was yellow, though but ſlightly.

All the parts being now inſpected, and found to be quite ſound, it came into my mind to lay open the inteſtines, by cutting into them longitudinally. In their cavities was a great quantity of mucus, and in that mucus, near to the more extreme part of the ſmall inteſtines, were ten round worms, all of them nearly of equal thickneſs, and of equal length alſo; and this length was about ſeven inches.

21. Would you rather chooſe then, to attribute thoſe irritations, which, by vellicating, and convulſing the fibres, had brought on ſuch violent vomitings, and, at length, ſudden death, to this yellow tincture, although it had not only infected the ſtomach, but a tendon of that nature alſo, or to ſo great a number of worms of ſuch a kind, whether they had crept into the ſtomach, or had continu'd where they were? You will heſitate at leaſt, and will not affirm the firſt poſition for a certainty.

But you would heſitate ſtill more, to go on to the ſecond, if you ſhould chance to believe, what is related in the additamenta, to this ſection (*g*), of the ſervant-maid of Altemburg, who diſcharg'd lizards, toads, and frogs, and ſometimes even thoſe that were not dead neither, but ſuch as liv'd, by the ſpecial licence of heaven, "to the ſixth day," from the mouth, and anus, and even, as ſhe herſelf ſaid, from the genital parts! It happens very luckily, that the learned gentlemen who have firſt written ſuch abſurdities, do not ſay that they were preſent, when theſe living beaſts were diſcharg'd; leſt we ſhould be under a neceſſity of concluding, contrary to our candid inclinations, that their eyes were deceiv'd, and play'd tricks with, by a ſet of juggling women. For I ſhould ſuppoſe that, in fact, there was nothing real in the things of this kind, which the woman did diſcharge, but a ſort of external, and accidental, likeneſs to thoſe animals: and that the body, and conſiſtence, of them, had been made up of polypous concretions, ting'd with the green colour of the bile.

It happen'd many years ago, that a virgin who was, herſelf, very virtuous, and honeſt, and born of honeſt parents, began, at the latter end of lent, to complain of a kind of troubleſome ſenſe of torture, and weight, with which the ſtomach was affected, and particularly at the time when digeſtion was going on. After this came on a pallid complexion, and an evident waſting of body. At length, about the end of two months, from the beginning of her complaints, ſhe was ſeiz'd, a little before the middle of the day, with three very violent ſtrainings to vomit, join'd with the greateſt loſs of ſtrength, and a fainting; in the firſt of which ſtrainings, ſhe brought up nothing at all, in the ſecond not a great quantity of a very bitter, and yellowiſh humour, and in the third, at which time the phyſician, who gave me this account, by letter, was preſent, ſhe threw up a ſubſtance, which I ſhall deſcribe to you, exactly in the ſame manner, that it was deſcrib'd to me, by this phyſician.

It was a ſmall plant, or rather a little herb, about an inch long, furniſh'd with radicles, a ſtalk, and three leaves at top, one of which was denticulated, the others perfectly reſembling a ſemicircle, and all of them being green.

(*g*) Obſ. 5.

The

The ſtalk, on its upper part, was white, and, on its lower part, green, except that it was diſtinguiſh'd with ſome very ſmall, and bloody ſtriæ. After three or four hours, the herb being now dry, had contracted itſelf, yet ſtill retain'd its colour. Being accurately examin'd by many perſons, and among theſe by ſome, who were ſkill'd in botany, before it was waſted away by frequent handling, and become almoſt friable; there was not one, among them all, who could ſay of what genus it was. The virgin, however, after the diſcharge of this ſubſtance, felt not the leaſt uneaſineſs in her ſtomach; and indeed evidently recover'd her colour, and her fleſh, when this account was ſent to me, by letter, which was not many days after. It was enquir'd of me what I thought of ſo ſtrange, and unhear'd of, a kind of vomiting. There was not any reaſon for me to imagine the ſame thing to have happen'd, in this caſe, that happen'd in the obſervations of ſome perſons, as for inſtance, of Lentilius (*b*), who ſays that he had ſeen "lettices thrown up by vomiting, with the flowers of the Indian creſs, borrage, and roſes, little, or not at all, chang'd in their colour, which a woman of the firſt rank, had eaten fourteen days before."

For to take no notice of other things, this virgin could not endure to eat herbs, ſallads, or ſucculent plants of any kind. One or the other, then, of theſe things remain'd certain, that ſhe had either thrown up an excreſcence in the form of a herb, or a polypus, from her ſtomach. And the preceding diſagreeable ſymptoms, the vaſt ſtrainings to vomit, the bloody ſtriæ, obſerv'd on the body that was thrown up, and the whiteneſs of its colour; for whatever there was of greeneſs, that might have been brought on by the bile being mix'd with acid juices; all theſe things, I ſay, ſeem'd to confirm one or the other of theſe conjectures: but which it would be the beſt to follow, I thought would be beſt determin'd by the enſuing circumſtances of the caſe, that is by there being new uneaſineſſes of the ſtomach, or none at all, or what not. And this is a ſummary of the anſwer, which I immediately return'd to the phyſician, who conſulted me thereon: nor did I afterwards hear any thing farther of this virgin.

22. What I ſhall add, in the laſt place, of vomitings that relate to the diſeaſes of thoſe parts, with which the ſtomach conſents, will perhaps be more uſeful to you. For that which prevents me from putting off the conſideration of theſe vomitings, till we come to the diſorders of thoſe parts, as I have done in regard to other vomitings, is that I have no diſſection to give you under this head. There was a collegue of mine, a very conſiderable man, the grandſon of a celebrated writer, and himſelf alſo worthy of great praiſe: who, when he was ſixty years of age, began to be atack'd with frequent and very troubleſome vomitings, though they ſometimes were quite at reſt for a day. What he threw up had nothing particular in it. He was attended, out of regard to the dignity of the patient, by three phyſicians, who were thought to be the moſt ſkilful, at that time, and without doubt were ſo, or at leaſt they were the oldeſt. As they did not doubt but the cauſe of the diſorder was in the ſtomach, they applied ſuch things as they thought proper to remove it, and theſe in great number, and variety, and for a long time together;

(*b*) Vid. append. ad a. 1. dec. 3. eph. n. c. in parall. ad obſ. 92.

gether; but every thing was in vain; till at length the patient becoming more emaciated, and tir'd out with the ſlavery of taking medicines, determin'd, with himſelf, to have done with them all, and retire into the country; whence having return'd again into the city, not long after, he was ſeiz'd in the evening, with a great coldneſs over his whole body, without any manifeſt cauſe, and on that very night diſcharg'd a great quantity of blood, with his urine. Soon after a great quantity of pus follow'd the blood, through the ſame paſſages. Wherefore bloody, and purulent, urines ſucceeding each other alternately, his ſtrength was ſoon pull'd down, and within a very few days he clos'd the period of life.

From this event of the diſeaſe, it is natural, and eaſy, to perceive, that the cauſe of the vomiting was not in the ſtomach, but in thoſe parts that ſerve for the ſecretion of the urine, and particularly in the kidnies, inaſmuch as they are wont, ſo eaſily, to draw the ſtomach into conſent, and excite it to vomitings. And, at the ſame time, it is underſtood, what was indicated, not by the ſtupors of the legs indeed, but by the pains, however, of which the patient had been accuſtom'd to complain very much even from the very beginning of the diſeaſe; what was indicated by the unuſual ſtimulus to make water, ſo that he could ſcarcely retain his urine, till he got the chamber-pot into his hand, and frequently, indeed, not at all, but eſpecially in the night; and, finally, you will perceive what concluſion might have been drawn, from a kind of hardneſs about the right epicolic region, as Gliſſon (*i*) call'd it, without doubt, theſe ſymptoms taken all together, notwithſtanding the patient did not generally complain of his loins, might have given ſome hint to the phyſicians, particularly in conjunction with the inutility of every method of cure, which had been applied to the ſtomach, that the cauſe of vomiting was inherent elſewhere, than in the ſtomach; and that in the kidnies, and particularly in the right, that ſome collection of morbific matter was probably made.

To this ſuſpicion ſome weight might have been added, from this enquiry, that I would always have you remember to make, in caſes where the cauſes of a diſeaſe are obſcure, and uncertain, and obſtinately reſiſt a cure, I mean to what diſorder the anceſtors of the patient had been liable. For by this interrogation, it would have been diſcover'd, in the preſent caſe, that diſorders of the kidnies had been very common in this illuſtrious family. And thoſe things which naturally occur'd to my mind, upon hearing the caſe of my collegue, and from knowing the preceding ſymptoms, you will ſuppoſe are written, not to accuſe any one, eſpecially the dead, which is not the leaſt part of my intention, but only to aſſiſt your ſtudies. Farewell.

(*i*) Tract. de partib. continent. c. 2. n. 10.

LETTER

LETTER the THIRTY-FIRST,

Treats of Fluxes of the Belly, with or without Blood.

1. THOSE ſubjects that, in the Sepulchretum anatomicum, are diſtributed into four ſections, "the cholera morbus, fluxes of the belly without "blood, dyſentery, and præternatural excretions of the belly," all theſe, I ſay, I chooſe rather, ſhould be comprehended in this one letter. And the reaſons of this reſolution are theſe. In the firſt place, the cholera "may "ſeem to be a diſorder common to the ſtomach, and inteſtines," as Celſus rightly ſays (*a*); for there is a diſcharge by ſtool, and a vomiting at the ſame "time." And as I have treated of the diſorders of the ſtomach, and am about to treat of the diſorders of the inteſtines, it is impoſſible but I muſt have already lit upon this diſorder, which is common to both, or muſt light on it hereafter; ſo that there is not the leaſt occaſion to treat ſeparately of it here, and ſlightly in particular; for Bonetus himſelf, who wrote the ninth ſection upon this ſubject, ſcarcely fill'd up three pages, and the greater part of them is taken up by the ſcholia, that are plac'd between.

You know, beſides, that it is my determination to repeat nothing. But he taking quite a different method, was ſo far from heſitating, whether to make uſe of the ſame obſervations, here alſo, which he has made uſe of elſewhere, that even in this very ſhort ſection, he has given one of them, and has not only interſpers'd the twelfth ſection, with a great number, as well as the two remaining ſections, but has even almoſt wholly made it up of them.

To this you may add, that parts of the ſcholia are not only repeated in different ſections, as that which is given in the tenth (*b*), from de Graaf, is repeated in the twelfth (*c*), but even in one, and the ſame ſection; as for inſtance, when, in the tenth ſection, what is taken from Willis, and what is taken from Ballonius, and ſubjoin'd to the ſeventh obſervation, are both equally repeated, the former in the appendix that follows the twenty-eighth obſervation (*d*), and the latter immediately below this very obſervation. Beſides, not to quit the tenth ſection, there are ſo many things added upon the transfuſion of blood, *& chirurgia infuſoria*, as it is call'd, under the ſixth obſervation, that they exceed the whole ninth ſection.

(*a*) De medic. l. 4. c. 11.
(*b*) Ad obſ. 25.
(*c*) Ad obſ. 15.
(*d*) §. 2.

Finally,

Finally, thoſe bloody ſtools which are the immediate conſequences of a wound, inflicted on the ſtomach, or the liver, certainly do not belong to the claſs of dyſenteries, which is the title prefix'd to the eleventh ſection. Yet I ſee that two obſervations, of this kind, are produc'd, here, under number twenty-five. As I do not permit myſelf, therefore, to take pattern from any of theſe improprieties, there cannot be ſo great a quantity of matter, but it may be very well comprehended in a ſingle letter. Dividing fluxes of the belly then, into thoſe that are without blood, and thoſe that are bloody, I will immediately produce two obſervations upon the firſt ſubject, from the papers of Valſalva.

2. A young man, who, through the whole courſe of his life, even when he was in the higheſt health, had frequent occaſions of going to ſtool, having reach'd his twentieth year, was ſeiz'd with griping tortures of the bowels, attended with frequent bloody ſtools, that is with a dyſentery. After twelve, or fifteen days, this was chang'd into a ſimple diarrhœa, with ſtools of a yellow colour, but without gripings: and this ſeeming to be ſomewhat mitigated, by the help of remedies; a ſimple tertian fever came on, which was put a ſtop to within a month. The diarrhœa ſtill continuing, he was attack'd of a ſudden, with an acute fever, which had manifeſt acceſſions. His pulſe was frequent, quick, ſoft, ſmall and weak. To theſe ſymptoms was added a ſtupor of the ſenſes, a conſiderable deafneſs, and a peculiar kind of ſwelling of the anterior part of the thorax, on the left ſide. In this manner, he died about the fourteenth day, from the beginning of the acute diſorder, at which time of the diſeaſe, what kind of ſtools the patient had, the attendants did not obſerve.

The belly, although it ſeem'd to be not at all ſwell'd, contain'd, nevertheleſs, a great quantity of ſanious ichor, which iſſu'd out of the inteſtines, in many places, where they were perforated to ſome conſiderable extent. This tract comprehended the extremity of the ileum, and the neareſt part of the colon beſides, to the extent of two hands breadth. In that part the inteſtines were eroded, and ulcerated, and on their internal ſurface even affected with a gangrene, ſo that you ſee they might be eaſily perforated. Near to this tract ſome of the glands of the meſentery had grown out into a tumour, wherein was ichor, not unlike that which had burſt forth into the cavity of the abdomen; but the very ſubſtance of this tumour was ſoft, and flaccid, and ſeem'd to incline to corruption. The ſpleen was three times as large as it naturally is.

The ſkin, and muſcles, of the thorax, where the ſwelling was, diſcharg'd a great quantity of ſerum, when they were cut into, eſpecially at the upper ſide of the ſternum: for from thence, that is from the borders of the pectoral, and ſubclavian muſcles, ſerum guſh'd out, as if from ſeveral little rivulets. The lungs, however, were ſound. Within the pericardium was a ſerum, like water in which freſh meat has been waſh'd. If you touch'd the heart, you found it to be ſo lax, and ſoft, that it ſeem'd to be not muſcular, but membraneous. In the ventricles thereof was a fluid blood, and this was ſo frothy that it reſembl'd the lixivium made uſe of by barbers, when agitated. And all the veins contain'd ſo great a quantity of air, that although they contain'd but little blood, they were nevertheleſs extremely

turgid, and in particular one branch of them that belongs to the ſpleen; for this branch, though it did not ſeem poſſible that it ſhould be more dilated, had ſcarcely any remains of blood in it. Within the cranium was found a little ſerum: but the brain itſelf no where ſhew'd any marks of injury.

3. The great force of putrefaction (to begin from the latter part of the hiſtory, and to return to the former part immediately after) in this body, appear'd from the great quantity of air that had been diſcharg'd, the great laxity of the heart agreed very well with thoſe ſmall, and weak pulſations. I have frequently obſerv'd the ſpleen to be enlarg'd, after other fevers, eſpecially when they had appear'd in different forms.

But to omit other things, and come to thoſe, on account of which, in particular, I related this obſervation to you, at preſent; you ſee, in the firſt place, how much it, at length, coſt this young man, to have his belly perpetually lax, that is, not moderately moiſt; for we are not ignorant of the aphoriſm of Hippocrates (*e*); but more moiſt and lax than it naturally is, and from an improper mode of living eaſily made ſtill more ſo. On the lax inteſtines, therefore, an attack was made by vitiated and redundant humours, ſo that they were not able to bear up under it. They were firſt troubled with a dyſentery. This left, according to the appearance of the caſe, the beginnings of ulcerations, which were the leſs attended to, becauſe the inteſtines being then already more relax'd, were not ſo extremely ſenſible to pain, as they would otherwiſe have been, and becauſe the ſanious ichor was hidden by the yellow flux, which had ſucceeded to the dyſentery.

The flux had ſucceeded, in conſequence of a part of the deprav'd matter, being carry'd back, from the inteſtines into the blood, after having been vitiated, in the inteſtines, ſtill more. And this being brought back again into the inteſtines, together with the bile, and the other juices, whoſe receptacles, and containing parts, were irritated by the mixture of this humour, the flux was not only kept up, but the eroſions were alſo encreas'd; ſo that, at laſt, where theſe eroſions were made, the inteſtines were not only ſeiz'd with a gangrene, but corroded, quite through their ſubſtance, by the moſt ill-condition'd ichor. And that this deprav'd matter was carry'd back into the blood, as I ſaid juſt now, is not ſo much prov'd by the fevers that follow'd it, as by the tumour of the myſentery, which lay as near as poſſible to the ulcerated tract of the inteſtines. For theſe ill-condition'd ichors being continually taken up, from that tract, and carry'd to the neighbouring glands, by the chyliferous ducts, at length deprav'd their internal ſtructure, ſo that the paſſage of theſe humours being now obſtructed, they evidently ſtagnated in thoſe glands, and rais'd them up into a tumour.

4. And from hence another cauſe was added, which encreas'd the flux, I mean the deprav'd ichor ſtagnating in the inteſtinal canal, which, before, had been carry'd off, by the paſſages that were now obſtructed. This kind of obſtruction, when it takes place in moſt of theſe paſſages, not only encreaſes fluxes of the belly, but is even the cauſe of them, and, in particular, of that which they call the cæliac flux: with which take care not to confound the *cæliacus morbus* that is deſcrib'd by Celſus (*f*). For in this "there

(*e*) 53. ſ. 2.

(*f*) L. 4. c. 12.

" is no motion to ſtool," but in that, of which I ſpeak, even the chyle itſelf is diſcharg'd, mix'd, beyond doubt, with recrementitious matter, ſo that the ſtools are render'd almoſt of a cineritious colour, and not white, as they imagine, who do not attend to this circumſtance, that the chyle is not to be found ſeparate from the other uſeleſs parts of the aliments, except within its own proper veſſels. Nor have they, who aſſert that they had ſeen white ſtools, meant any thing more than ſtools of a whitiſh colour, I mean if they are compar'd with the natural excrements, or if they did really mean white, the whiteneſs was that of a purulent matter, or of a mucus ſimilar to pus, or ſomething elſe of that kind; as, for inſtance, if any one, troubled more with a lienteric, than a cæliac diſorder, ſhould diſcharge by ſtool the milk that he had taken in, unchang'd.

For in the lienteric flux, the aliments are not concocted, and prepar'd, as in the cæliac, whether the juices, by which they ought to be prepar'd, are unfit for performing that office, or the ſtomach, by too precipitate a motion, throw them out almoſt as ſoon as they are taken in, or whether the ſtomach itſelf being lax, and there being a total reſolution, or, at leaſt, but little conſtriction of the pylorus, ſuffers the aliments to ſlip out without digeſtion; although there was nothing lienteric in that old man, the orifice of whoſe pylorus I have deſcrib'd to you, on a former occaſion (*g*), notwithſtanding it was not only, of itſelf, much larger than it uſually is, but what is ſtill more remarkable, furniſh'd with no protuberating ring, in the greater part of its circumference. Nor was there even any thing of a cæliac affection; nevertheleſs there are many learned men, who ſuppoſe that the pylorus is " too much dilated," in this diſorder. I, however, do not ſuppoſe any peculiar cauſe to be latent in the ſtomach; but, ſometimes, rather in the tube of the inteſtines, whether, by an accelerated motion, the ingeſta are prematurely diſturb'd, and carry'd off, before the chyle can be properly extracted from them, or by reaſon of the motion being languid and ſlow, that which has been extracted, is impell'd no farther; ſo that ſtagnating in the ſmall roots, as it were, of its proper veſſels, a farther abſorption of chyle is prevented, juſt as it is prevented from going on, by an obſtruction of the meſenteric glands, as I hinted a little above: not to add any thing upon the ſubject of cicatriz'd ulcerations cloſing up the mouths of the lacteal veſſels; of which circumſtance you will find examples in the Sepulchretum (*h*), as you will likewiſe of the obſtruction of thoſe glands, in bodies that, when living, had labour'd under the paſſio cæliaca.

Obſervations of the lienteric flux, or of one that was nearly of the ſame nature, you will have to add to the others, from the volumes of the Cæſarean academy (*i*), not indeed without obſtructions, of theſe, and of other glands, but, at the ſame time, with the coats of the ſtomach being depriv'd of all their ſtrength, and at other times with the parietes of the ſtomach, and of almoſt all the inteſtines, being reduc'd to the thinneſs of paper.

But let us return from this digreſſion, into which I fell accidentally, and which nevertheleſs it may not have been altogether uſeleſs to have touch'd upon here, to the obſervations of Valſalva.

(*g*) Epiſt. 21. n. 15.
(*h*) Sect. hac. 10. Obſ. 2. & 4. ac 5.
(*i*) Act. n. c. tom. 2. obſ. 65. & cant. 6. obſ. 94.

5. An

5. An infant, ſeventeen months old, was ſeiz'd with a diarrhœa. To this a fever was added, with a cough, and a kind of itching of the gums, and the noſtrils, which the child ſignify'd by a frequent friction, with his fingers, upon thoſe parts. In the mean while the diarrhœa increas'd, and although the ſtools had, before, been yellow, or green, they now firſt began to be ting'd with a bloody hue, and, at length, to be chang'd into a black colour, and be attended with a ſingultus, which was about the ſeventh day. On the beginning of the ninth day, either ſpontaneouſly, or by the force of an aſtringent kind of remedy being apply'd to the feet, by the advice of an old woman, they were entirely put a ſtop to. However, ſeven or eight hours had ſcarcely paſs'd, after this obſtruction, but being oppreſs'd with ſtreightneſſes of the præcordia, and agitated with continual anxiety, and toſſing of the whole body, he died on the ſame day.

The inteſtines being turgid with air, contain'd a ſmall quantity of very black matter, ſuch as had been before diſcharg'd. In the meſentery were many ſacculi adipoſi, and notwithſtanding more than twenty-four hours had now paſs'd, ſince the time of the child's death, they, nevertheleſs, contain'd very ſmall particles of fat, which were agitated by a tumultuary motion, one with another. The lungs, on the back part, were ſomewhat black, and particularly the right: they were ſound nevertheleſs. In the pericardium was a little water: but in the heart was not the leaſt appearance of any polypous concretion. In the brain was found a little ſerum.

6. A diarrhœa, join'd with a cough, and an itching of the noſtrils, might have given a ſuſpicion of worms in this little boy: none of which however were found. But the itching of the gums really ſhew'd that teeth were about to cut through them. For ſo he who ſaw the caſe judg'd, that is Valſalva, when he mark'd out this obſervation, in his little index, in the following manner. "A diarrhœa with difficult dentition, and convulſive motions." And how eaſily dentition may excite convulſions, you yourſelf are not ignorant, and I have, on a former occaſion, confirm'd (*k*), by giving you two fatal caſes of infants, at the ſame time pointing out where I ſhall demonſtrate, by what means it alſo brings on a flux of the inteſtines, and by what means this, if it be moderate, prevents convulſions coming on. And from hence you perceive, how very dangerous it muſt be, for an inteſtinal flux to be ſuddenly and totally ſtop'd, at this time, in particular, as a ſudden and total ſtoppage thereof, at other times, is never without conſiderable danger. But if the matter that has been diſcharg'd by ſtool is, moreover, of the moſt pernicious properties, this matter being confin'd within the body, may not only bring on death, but a very ſpeedy, and a very violent one. And that the matter, in this caſe, was of a malignant and deſtructive nature, is not only ſhown by the colour of the ſtools, and the ſingultus, but by that very ſtrange, and unuſual, motion in the particles of the fat, whatever it was (for ſo ſtrange it is, that I ſhould credit few beſides Valſalva, in this matter) is more than ſufficiently demonſtrated.

But to ſpeak only of the colour; do not imagine, becauſe that very black colour, of the diſcharg'd matter, ſucceeded to the bloody tincture, that the

(*k*) Epiſt. 9. n. 4. & Epiſt. 10. n. 9.

ſtools were nothing but blood. For Valſalva was not a man of this kind, that he could not eaſily diſtinguiſh blood, when diſcharg'd, or remaining behind, in the inteſtines, after death, if it had really been blood. Wherefore, either that tincture, which was ſuppos'd, by the women, to be owing to blood, was ſome portion of very ill-condition'd humour, then firſt beginning to burſt forth, and to tinge the matter, that was before contain'd in the inteſtines, or if it was really bloody, it diſtill'd from ſome ſmall veſſels, which the more acrid part of this deprav'd humour had eroded. And this recent humour being encreas'd, by the addition of other juices, either in the gall-bladder, or in the cavity of the inteſtines, the nature of which you may, in ſome meaſure, gueſs at, by the experiment of de Graaf, which is alſo copied in the Sepulchretum (*l*), gave that very black colour to the whole mixture, and repreſented the atra bilis of the ancients, by its pernicious effects. How violent, and how ſpeedy, a death it alſo brought on, in that ſmith, of whom I wrote in the laſt letter (*m*), you certainly remember. Nevertheleſs it ſometimes happens, though but ſeldom, and with difficulty, that a perſon in theſe circumſtances is ſav'd. And as I happen'd to meet with this, in another ſmith, in the year 1710; I will not make any ſcruple to give you the heads of that obſervation, in this place.

7. A young man of a ſlender habit, but ſtrong, both in regard to conſtitution, and years, nor leſs aduſt by means of his art, than by his temperature, being ſubject to hæmorrhages of the noſtrils, and having been long without them, was ſeiz'd, in the beginning of the ſpring, with a fever of a malignant kind. Some perſons of the firſt rank, in the place of my nativity, who were fond of this man, as a very ingenious artiſt, beg'd of me, that I would enter into conſultation with his phyſician, who, though an elderly man, had no objection to this ſtep. The reaſon of this deſire was, that the caſe was reduc'd to a great extremity. For to the other ſymptoms had been added, on that day, ſo great a diſcharge of blood from the noſtrils, that, as within five hours, it had been diſcharg'd to the quantity of ſeven pounds, nor could as yet be ſtop'd, by any means whatever; the man's ſtrength and pulſe were almoſt ready to fail.

We both of us, in conjunction, did all in our power to reſtrain this hæmorrhage, and to obviate the other ſymptoms. But ſcarcely had the blood begun to be ſtop'd, when what we were afraid of came on, that is the fever, being exacerbated, according to cuſtom, about noon, renew'd the hæmorrhage. Being again buſy'd in giving aſſiſtance to the patient, behold black ſtools began to be diſcharg'd. And although it was natural to ſuppoſe, that theſe were part of the blood, that had flow'd down by the poſterior foramina of the noſtrils, into the fauces, and ſtomach, the patient aſſur'd us that he did not perceive any thing to trickle down, from the fauces, into the gula: and this was confirm'd by the appearance of what had, in the mean while, been brought up by vomiting, in which there was nothing bloody or black. And having after that inſpected all the cloths, upon which the diſcharges from the inteſtines were receiv'd, and ſeeing a black colour indeed, but nothing

(*l*) Ad. obſ. 15. ſect. 12. (*m*) N. 16.

bloody

bloody amongſt them; it not only brought to my mind the well-known predictions of Hippocrates, but alſo the caſe of that young man, mention'd by Ballonius (*n*), who being affected in a manner very ſimilar to that of our patient, and having diſcharg'd black ſtools, after too great a hæmorrhage from the noſtrils, died on the ſeventh day of his fever.

And there was here ſo much the greater reaſon to fear, becauſe, as Ballonius, nevertheleſs, ſuſpected that the blood had flow'd down, from the fauces, into the ſtomach, we were, as I ſaid before, but little at liberty to ſuſpect the ſame, and indeed leſs and leſs ſo, the more we conſider'd all things.

For as the ancient phyſicians, in the opinion of whom is Sennertus (*o*), divide black ſtools into thoſe which are bloody, and thoſe that are owing to a natural melancholic humour, and, finally, into thoſe which are from atra bilis, and teach us, that the two firſt kinds are attended with leſs danger, but that the laſt kind is extremely dangerous, that is to ſay, thoſe that "are "black, ſhining and acrid;" theſe which we ſaw were, certainly, very black, and ſhining, and, as the patient complain'd, acrid alſo. On the following night he had the ſame kind of ſtools, except that they were ſomewhat leſs fluid. Yet after that he had no more of the ſame kind: but the milk which was thrown up, by way of glyſter, he diſcharg'd at firſt tinctur'd with the colour of tobacco, and on the following days of a brown colour, mix'd with a ſlight yellow: yet whatever was diſcharg'd, had the moſt offenſive ſmell. Notwithſtanding this deplorable ſtate of things, however, the patient, by the bleſſing of God, eſcap'd, and his former health was entirely reſtor'd; but he was not free from his black ſtools before the twenty-fourth day, and they had begun about the ſixth day of the fever; nor was he, after that, without many various, and grievous ſymptoms, which for a long time afflicted him.

Amongſt theſe, were pains of the belly, thirſt, a roughneſs, and blackneſs of the tongue, and though he drank often, a dryneſs; and while he drank, there was a ſound, as if he threw what he drank down into a deep place, his voice was hoarſe, and low, he had a trembling of his hands, a ſubſultus of the tendons in his wriſts, an inconſtancy of the pulſe, and often a ſmallneſs, and, if you preſs'd upon it, a great weakneſs, and ſometimes a very conſiderable, and almoſt inexplicable, inequality, but always a frequency, and eſpecially when the fever was very hot, and violent, which was very often the caſe; the reſpiration was various, ſo that it was ſometimes deep, and even, ſometimes, not without difficulty; his ſleep was, at firſt, laborious, and after that there was an exceſſive, and almoſt continual, drowſineſs, he even ſlept with his eyelids brought near together, and yet with his eyes not quite ſhut, he was ſometimes not quite free from delirium, had a ſlowneſs in anſwering, a difficulty in forming his words, and a forgetfulneſs of giving notice, when he had occaſion to go to ſtool, or to make water, beſides being heavy of hearing, and lying on his back, as if the power of turning himſelf, on his ſide, was, at that time, taken away, whereas, at other times, there was, for

(*n*) L. 1. Conſil. 98. (*o*) Med. pract. l. 3. p. 2. ſ. 2. c. 10.

the

the moſt part, a greater power of exertion in the muſcles, and a greater readineſs to take nouriſhment, than that heavineſs, and the other ſymptoms, I have mention'd, ſeem'd capable of permitting.

As many of theſe ſmyptoms, and the worſt of them, in particular, ſhow'd themſelves more than once, and for a long time together, they caus'd us to be, for a long time, more in fear, than in hope, as to the event of the diſeaſe, while every other perſon whatever, who ſaw the patient, pronounc'd him quite deſperate. But nothing ſeem'd to us, to be of ſo much advantage, as the great quantity of urine, that was diſcharg'd; for the ſweats were but little, and not frequent, nor did they ever appear over the whole body, and what the inteſtines diſcharg'd, was generally but ſmall in quantity, and not of ſuch a nature as to be likely to give relief, notwithſtanding a worm was, ſometimes, obſerv'd in the ſtools.

8. But black ſtools, of that kind, are pernicious, not ſo much on account of their quantity frequently, as in their effects, and are always the proofs of a very ill-condition'd humour, which gives riſe to them.

Yet other inteſtinal diſcharges, that are equally free from blood, as the yellow, the green, the watry, and others of this kind, are, ſometimes, not deſtructive by the pain they create only, but by their quantity alſo. And all theſe excretions generally owe their origin to ſome ſtimulus, that irritates the inteſtines, by what means, or from what part, ſoever, it got down into them: for as we ſee that a great quantity of humours is diſcharg'd, by means of medicines violently purgative, ſo we may ſuppoſe that from ſome ſtimulating fluid, which is generated within this canal, or ſent down thither, from the arteries, the ſame thing muſt of courſe happen.

For beſides the pancreas, the liver, and the gall-bladder, there are, by reaſon of the very large extent of ſurface, in the inteſtines, innumerable paſſages, though very ſmall indeed, through which any thing unuſual may be ſeparated from the blood. And theſe ſame innumerable paſſages, when the inteſtines are frequently, and for a long time together, ſtimulated, convey an incredible quantity of ſerum. Nor are we to ſuppoſe, with the common people, that whatever is diſcharg'd of a yellow, or green colour, is all of it bile, eſpecially ſince from the experiment of Diemerbroeck, which you have alſo in the Sepulchretum (*p*), it is eaſily perceiv'd, with how ſmall a quantity of bile, a great quantity of water may be ting'd. Nor is there any neceſſity for aſcribing the griping pains, with which the patient is then affected, to the quantity of bile, which is mix'd with the ſtools, ſince Willis has deſcrib'd diarrhœas "almoſt watry, and limpid (*q*)," which he nevertheleſs choſe, on account of the "griping tortures," that attended them, to call dyſenteries. And thoſe which attack'd many of the inhabitants of London, who were, the day before, ſtrong, and in good health, particularly in the autumn of the year 1670, reduc'd their ſtrength to ſo great a degree, within the ſpace of twelve hours, that they ſeem'd juſt'ready to die, and that not from the great quantity which had been diſcharg'd; for he ſays, "that if an equal quantity of

(*p*) In. fin. ſchol. ad obſ. 3. §. 1. ſect. 9. (*q*) Pharmac. Ration. ſ. 3. c. 3.

"pure

" pure blood had been diſcharg'd, it could not have produc'd equal " weakneſs."

But on the contrary, even the vaſt quantity of ſerum alone, that was diſcharg'd, not only brought on an immediate ſwooning, in the woman of whom Marcellus Donatus gives the hiſtory (*r*), but alſo brought down almoſt to the brink of death, the notary of whom Poterius ſpeaks (*s*); for neither of theſe authors mention any thing of pains; but the former ſays, " that " by one excretion, ſo great a quantity of clear water was diſcharg'd, as to " fill a veſſel of a very large ſize, that was made uſe of to receive it," and the latter, " that through the whole of one day, more than forty pints of ſerous " matter was diſcharg'd." Yet I would not deny, that there might be ſome irritating matter in theſe diſcharges, join'd with a redundancy of ſerum in the blood, and perhaps with ſome laxity of the inteſtines. I only ſay this, that it does not ſeem as if the pains had been ſo ſevere, as to make them deſerve notice, and that after ſo great a quantity of ſerum having been excreted, nothing elſe was wanting to explain what happen'd to both of them.

For the blood veſſels cannot contract themſelves ſo ſoon, as to embrace, cloſely, the column of blood that is greatly diminiſh'd, though this is extremely neceſſary, in order to put the blood into a proper motion, eſpecially when it is in great meaſure depriv'd of its fluidity, and, of conſequence, gives more reſiſtance to the force of the veſſels upon it, not to ſay any thing of the neceſſity there is of the ſame fluid humour, in order that thoſe ſecretions, from the blood, may be ſpeedily, and properly made, without which life cannot ſubſiſt, nor will I enquire, whether for theſe reaſons, where the queſtion is of a very great, and ſudden, effuſion from the veſſels, it is of worſe conſequences for ſerum only, or for blood, itſelf, to have been diſcharg'd, at the ſame time; for notwitwſtanding ſerum may be more ſpeedily and eaſily repair'd, yet the blood which does not remain in the veſſels, without its neceſſary portion of ſerum, is neither unfit for the ſecretions, nor gives more reſiſtance than before, to the cauſes which put it into motion.

9. And I could wiſh it had happen'd to me, rather to bandy about this queſtion in diſputation, than to experience any thing of the kind myſelf, in any ſhape. But in the year 1733, when in conſequence of a letter from his eminence the cardinal Annibal Albano, to which it became me to be obſequious, I travel'd to and from Forli to Peſaro, and from Peſaro to Forli, on poſt-horſes, for the ſake of conſulting with a certain phyſician, I was attack'd with ſo great a flux of the inteſtines, that within twelve hours, I diſcharg'd, at leaſt, ſixteen pints of almoſt limpid water. The pains were ſlight: the ſtools not very frequent, but very large: and I know not how long they might have continu'd, if a ſlight nauſea had not put me in mind to try the effects of vomiting, by drinking a little quantity of warm broth. And although, naturally, I am by no means inclin'd to vomit, yet it ſucceeded ſo happily, that having thrown up a greeniſh little body, which ſeem'd to be a ſmall leaf of a boil'd herb, the nauſea, and the inteſtinal flux, were cur'd at the ſame time. But whether it was a real leaf, and if it was, where, or when, I had eaten it, I could not find out, unleſs this might have happen'd on my jour-

(*r*) De med. hiſt. mir. l. 4. c. 20. (*s*) Obſerv. cent. 2. c. 62.

ney,

ney, while I was taking ſome refreſhment, in an inn, haſtily, and juſt while the horſes were chang'd; for in this manner I might have ſwallow'd it down, whatever it was, unnotic'd.

How much danger I had then been in, I better underſtood, when, on the day following, I perceiv'd that my body, and particularly my face, and hands, were grown thin, and lank, as if it had been from a very long, and acute diſeaſe, and felt ſo great a dryneſs in the mouth, and fauces, that although I waſh'd them over and over again, I found no advantage from thence, and I ſaw that the water, which I had us'd for that purpoſe, when I threw it out of my mouth into a baſon, was made almoſt black in the mouth. And theſe ſymptoms, together with a laſſitude, laſted two or three days, and were, by degrees, diminiſh'd. But the loſs of appetite for food of all kinds, and what you will be more ſurpriz'd at, in ſuch a dryneſs, even a loſs of appetite for drink, laſted ſomewhat longer, till a broil'd fiſh, and a particular kind of wine, which, in its own nature, is bitteriſh, began to be deſir'd by the ſtomach, and be well born by it. All which circumſtances I was willing to recollect minutely, and write to you, as they were not receiv'd from any other hand, or obſerv'd in any other perſon, but taken by myſelf, and from myſelf; and theſe ſuch as are not eaſily to be met with, among thoſe who have written upon diarrhœas, not even Carolus Piſo excepted, who is ſaid (*t*) "to have given a perfect deſcription of this diarrhœa," that is of the watery diarrhœa. For if you read over the whole chapter, which is at the ſame time quoted, and is entitled *De Diarrhœa ſeroſa* (*u*), you will not find a caſe to compare with mine.

10. And if you enquire into the cauſes of this diſorder, you ſee that the primary cauſe had been in the ſtomach: and I think you cannot doubt, but motion, and irritation, from which an excretion of ſerum is brought on, may be propagated to the inteſtines, from a ſtimulus affecting the ſtomach. Turn, in particular, to the obſervations of Jo. Riolanus, I mean the elder, which you alſo have here in the Sepulchretum (*x*): you will ſee that a matron died, within about fourteen hours, of inteſtinal diſcharges, "ſimilar to white "water, milky indeed, but liquid, and in ſuch a quantity, as to fill a large "baſon, every time ſhe went to ſtool," and that the cauſe of this was found to be "an ulceration in the fundus of the ſtomach."

But whence came ſo great a quantity of water? In regard to my own caſe, I will firſt ſay, that in the preceding ſummer, I had made uſe of it, to temper thoſe generous wines, with which only, my native place, at that time, abounds, and had drunk water, in greater quantity than uſual, ſome part of which, notwithſtanding when I was ſeiz'd with that flux, I ſeem'd to myſelf, and to others, to be in very good health, might perhaps have remain'd mix'd with my humours in rather a greater quantity than was neceſſary. And on the three days, which had preceded the two days, whereon I travel'd, and on the very day in which I was ſeiz'd with that flux, there had been very great, and almoſt continual ſhowers of rain, ſo that I might have drunk in a

(*t*) Vid. commerc. litter. a. 1734. hebd. 42. poſt. num. iii.

(*u*) Obſerv. de præterviſ, hacten. morbis ab aqua ortis ſect. 4. c. 1.

(*x*) Sect. 10. obſ. 18.

great

great quantity of water, from the moiſt air, by the abſorbing ſurface of the lungs, and the whole body in general.

In the laſt place, this happen'd to me in the beginning of October; for you have ſeen, that the watery fluxes deſcrib'd by Willis (*y*), and you may ſee that the flux, which I refer'd to, as deſcrib'd by Poterius (*z*), happen'd in the autumn, and near to the ſame time of the year, that, likewiſe, which is ſpoken of by Marcellus Donatus (*a*), as did alſo the three firſt, which are taken notice of by Piſo (*b*). For when the air begins to grow cool, at the decline of the Seaſon, this watery humour, which flow'd copiouſly from the body, during the time of the ſummer heats, and not by means of ſweat only, but by means of inſenſible perſpiration alſo, is now retain'd, and added to that, with which, for certain cauſes, the bodies of certain men do, at that time, more abound; ſo that it is not to be wonder'd at, if where an irritation of the inteſtines comes on, as it did come on in me, with a great agitation, and concuſſion, of the body, and humours beſides, from travelling very faſt to and fro on horſeback, and that for a long way too, it is not, I ſay, to be wonder'd at, if that does ſometimes happen, which happen'd to me then.

11. But if you are not content with the many cauſes which I have hinted at, and think that ſome other ought ſtill to be enquir'd into; that will be better, than if you were to acquieſce in one of them, I mean the autumnal ſeaſon. For the ſame time, the ſame year, the ſame city, that is the city of London, had inteſtinal fluxes ſpreading through it epidemically, without blood indeed, but attended with griping tortures; yet ſo different were theſe diſorders, that if you compare the deſcriptions of Willis (*c*), and Sydenham (*d*), one with another; you will be very much ſurpriz'd to find, that although both of them give you an account of the fluxes, with which the inhabitants of London were troubled, in the autumn of the year 1670, the one deſcribes "watery fluxes," and the other "mucous fluxes," nor does the former take notice of ſo much as one that was mucous, nor the latter of one that was watery.

How could this happen? For my part I ſhould ſuppoſe, that in a city of this kind, which is, perhaps, more than any other, large and populous, it had happen'd to each of them, according to their deſcriptions, ſo that the one met with none but watery fluxes, and the other none but mucous. And this difference I ſhould ſuppoſe aroſe from hence, that as in various parts of a great city, there may be a various conſtitution, and mixture, of air, various arts, and occupations of men, and other circumſtances of the like kind, ſome bodies may abound with a more fluid, and others with a more lenteſcent, and mucous, ſerum; ſo that, although there might be the ſame kind of irritation in the inteſtines of all; the fluid, nevertheleſs, which is preſs'd out from the internal ſurface of their tube, will not be the ſame in all.

But if mucus, or ſerum, are now and then diſcharg'd, ting'd with any other colour, whether this is added by the bile, or they appear in this manner of themſelves, there are, and have long been, many phyſicians, who, following the example of thoſe Engliſh gentlemen, provided there be frequent diſ-

(*y*) Supra n. 8.
(*z*)
(*a*) Ibid.
(*b*) C. 1. ibid. cit. n. 9.
(*c*) Vid. c. cit. ſupra ad n. 8.
(*d*) Obſ. med. circa morb. acut. ſect. 4. c. 3.

charges, not unattended with gripings, and pain, do not heſitate to call fluxes of this kind, though they are not bloody, dyſenteries. So I remember, when I formerly liv'd at Bologna, that epidemic fluxes of this kind, which ſpread about at Modena, were call'd by the phyſicians of Modena, in letters that they ſent to the phyſicians of Bologna, dyſenteries, which appellation the latter did not diſapprove. Letters of this kind, in particular, I read, that were ſent to Albertini, by one of whom I have already ſpoken to you (*e*), I mean Jo. Franciſco Bernardoni, and in theſe letters, I read amongſt others, a hiſtory, which I think ought not to be paſs'd over here, as it has the diſſection join'd to it. For as, by reaſon of the ſame griping tortures having attended theſe fluxes, which attend dyſenteries, a ſuſpicion had ariſen of blood being diſcharg'd, but conceal'd under other colours; Bernardoni was willing either to remove, or confirm, this ſuſpicion, by diſſection. And this was the manner, in which he related the caſe, in thoſe letters, which he afterwards confirm'd in my preſence, with his own mouth.

12. A prieſt, who labour'd under an inteſtinal flux, diſcharg'd various kinds of humours, and theſe diſcharges were attended with very ſevere pains of the bowels, but in them there appear'd neither any thing bloody, nor purulent. He died on the thirteenth day of the diſeaſe.

All the inteſtines being examin'd, cloſely, on their internal ſurface, and that more than once, ſhew'd no where any eroſion, much leſs any ulceration. And what ſeem'd more ſurprizing ſtill, they were not without that mucus, as it is call'd, with which they are naturally ſmear'd over.

13. But is it ſo likewiſe in bloody dyſenteries? For I ſhall call them bloody here, to diſtinguiſh them from thoſe that were without blood, which I ſpoke of laſt; though, at other times, and indeed preſently, I ſhall call thoſe that are bloody, dyſenteries, without the addition of any epithet whatever, according to the cuſtom of the Greek phyſicians; the ancient Latin phyſicians us'd to name them *tormina*. Both of which appellations you may, in particular, learn, from Celſus (*f*).

Celſus does not doubt, but that in a dyſentery, "the inteſtines are ulce-"rated, internally," and that blood "is diſcharg'd from them, ſometimes, "with a kind of mucous matter, and that, at other times, ſome kind of "fleſhy portions, as it were, are diſcharg'd, together with the blood," following the opinion of the more ancient phyſicians, and amongſt theſe, of Hippocrates (*g*), who had, nevertheleſs, call'd theſe fleſhy portions, "a kind "of caruncles." And indeed the inteſtines are often ulcerated: but not always. Both of which poſitions are to be demonſtrated.

For, in the firſt place, there are ſome who aſſert, that this ſcarcely ever happens, and perſons of this kind have even come to the knowledge of the celebrated Fantonus (*h*). And as he has given two of his own obſervations, in oppoſition to their oppinion, ſo you may alſo add others, not only from this eleventh ſection of the Sepulchretum, but even ſome that are taken from other places, and paticularly from the commentary of Brunnerus (*i*). For

(*e*) Epiſt. 23. n. 2.
(*f*) De medic. l. 4. c. 15. in princ.
(*g*) Sect. 4. aph. 26.
(*h*) De obſerv. med. & anat. epiſt. 4.
(*i*) In pancr. ſecund. c. 7.

Brun-

Brunnerus ſaw, in a dyſenteric woman, the mouths of the glands of the duodenum "eroded:" and in others, who had labour'd under a long flux of the inteſtines, he alſo found "ulcers of a cancerous nature, as it were (*k*)," and in one (*l*) who had been troubl'd with a cæliac flux, and in another (*m*), who had been afflicted with a lientery, "an ulcerous diſpoſition," in the laſt mention'd patient, of the colon; and in the former, throughout the whole tract of the inteſtines, he reckon'd up "more than ſixty little ulcers:" and theſe things I was willing to take notice of, that you might know, what cauſes may ſometimes happen, ſo that the inteſtines being irritated, where the ulcers are, by the contact of the ingeſta, which paſs that way, theſe ingeſta may be ſo much the ſooner expell'd, without giving time for the chyle to be perfected, or even extracted, and that you might at the ſame time conceive, if in theſe kinds of fluxes, the inteſtines are ſometimes affected with ulcers, how much more eaſily they may be ſeiz'd with the ſame diſorders, where the violence of the pain is a proof of there being ſo much a greater degree of acrimony, I mean in the dyſentery. And leſt we ſhould ſeem to digreſs from our ſubject, attend to two obſervations of Valſalva's, that is, not only the one which is deſcrib'd above (*n*), of a young man, in whom a diarrhœa, without tormina, ſucceeding to a dyſentery, he found the latter part of the ileum, and the firſt part of the colon, ulcerated; but this alſo which I ſhall immediately ſubjoin.

14. A man of thirty years of age, was ſeiz'd with a dyſentery. This continu'd a long time, till at length he was ſeiz'd with a ſpitting of blood, and with death.

In the belly, the ſmall inteſtines, indeed, were found to be unhurt: but the large inteſtines were, in ſome places, ting'd with a black colour, and had ſome of their glands entirely eroded, the remaining glands being all drench'd with a bloody humour, in the very excretory orifice. In the gall-bladder was but little bile.

In the cavity of the thorax, towards the inferior part, was no ſmall quantity of blood extravaſated. At the inferior part, alſo, the lungs were ſtuff'd up, and both lobes adher'd, on their ſides, cloſely to the pleura, which was itſelf, likewiſe, evidently injur'd. The right ventricle of the heart contain'd a polypous concretion.

15. The appearances of diſeaſe, which were found in the thorax, refer to another ſubject. And, thoſe in the belly, to the preſent. But as theſe things which Valſalva has remark'd, of the glands of the inteſtines, agree both with thoſe that you will ſee produc'd from Peyerus, in this ſection of the Sepulchretum (*o*), and with thoſe that you have ſeen in the firſt, from among the obſervations of Brunnerus, juſt now pointed out (*), that one thing only, in regard to little bile being found in the gall-bladder, would be contrary to the opinion of Spigelius, if he, as ſome learned men aſſert, had pronounc'd the gall-bladder to be "large in dyſenteric bodies," whereas he has only ſaid, that he had "frequently" ſeen it ſo (*p*). Yet, if we examine this whole ſection narrowly, we ſhall ſee it obſerv'd but once by others. For Cummenus (*q*), was the only perſon

(*k*) C. 10.
(*l*) C. 7.
(*m*) Exercit. de gland. in duodeno. §. 6.
(*n*) N. 2.
(*o*) Schol. ad obſ. 4.
(*) N. 13.
(*p*) De hum. corp. fabr. l. 8. c. 13.
(*q*) Obſ. 1.

who found " the gall-bladder to be very large, and very full of bile," and in the body of a woman. Bontius (*r*), and Lamonjerius (*s*), found it to be diſtended indeed; but the latter with pus, and the former with a white humour, " like a pultice of ſtarch, ſo that no traces of bile were left," whereas Spigelius has declar'd, that the increas'd ſize of it was owing to " the " quantity of bile, with which it was fill'd." But Franciſcus Platerus (*t*), not only found it not diſtended with bile, as others likewiſe ſeem to have found it, who ſay nothing upon the ſubject, but even " quite empty."

Moreover, the patient of Platerus had the inteſtines ulcerated, after a dyſentery, which continued " ſome days;" and this I obſerve, leſt you ſhould be apt to imagine, that this did not happen, but after dyſenteries of long continuance. And there were innumerable little ulcers, for they took up the whole extent of ſurface in the ileum, and were " the breadth of " three fingers diſtant from each other;" ſo that this obſervation may be, in ſome meaſure, compar'd with the obſervation of the celebrated Baſſius (*u*), who, after a dyſentery, ſaw the ſame inteſtine diſtinguiſh'd with ulcers, " at the diſtance of almoſt a finger's breadth from each other, and " ſometimes, at the diſtance of a joint of the thumb, proceeding nearly in " one tract, or ſeries," as the figure which he added (*x*), has alſo expreſs'd (except that he ſeems rather to have repreſented the jejunum, than the ileum) confirming the deſcription, in which the ſame opinions, of Peyerus, that I pointed out a little while ago, are ſtrengthen'd by a probable conjecture, I mean that, as thoſe bodies, which he call'd glandular plexuſſes, were wanting, and as every ulcer ſeem'd to occupy one of the ſeats of theſe glandular plexuſſes, it was very ſuppoſable, that the beginnings of the eroſions, had been in the ſame plexuſſes, which were, at length, entirely conſum'd.

Nay, indeed Brunnerus, in that obſervation (*y*), wherein he number'd more than ſixty little ulcers, has teſtified that theſe ulcers, " had their ſituation in no other part, than in theſe plexuſſes." And certainly, that in inteſtinal fluxes, the humours are thrown upon the inteſtines, by theſe, or other glands, may be even argued from their magnitude being increas'd, as happens in all other glands whatever, while their ſecretions are greater than uſual. Thus in the body, wherein, after a long inteſtinal flux, the ſame Brunnerus found ulcers, about the extremity of the jejunum (*z*), he not only ſaw " glandular tuberoſities," in that part likewiſe, but alſo found the internal coat of the inteſtine, become much thicker, than it naturally is, and this coat " ſeem'd, from the beginning, to the end, to be entirely glandu- " lar and luxuriant with glands." And of his glands of the duodenum he ſays (*a*), " they are generally found to be much thicken'd, in thoſe who die " of diſeaſes in the inteſtines, ſuch as a diarrhœa, or a dyſentery:" and he ſays that the ſame glands, had even " become indurated (*b*)," in that dyſenteric woman, in whoſe body he ſaw the orifices of them " eroded," as I have already ſaid.

(*r*) Obſ. 6.
(*s*) Obſ. 19.
(*t*) In addit. obſ. 3.
(*u*) Obſ. anat. chir. med. dec. 3. obſ. 7.
(*x*) Tab. xi. fig. 1.
(*y*) Supra ad. n. 13.
(*z*) C. 7. ibid. cit.
(*a*) In earum demonſtr. anatom.
(*b*) Ibid.

16. However, this laſt obſervation of Brunnerus, and the two which I related a little before (*c*), from Platerus, and Baſſius, and a part of that which was given from Valſalva, in the beginning of this letter (*d*), even of themſelves, ſufficiently ſhow it to have been too haſtily pronounc'd by Panarolus, as you have it here in the Sepulchretum (*e*), " that an excoriation, " and corroſion, could not be brought on in the upper inteſtines of dyſen- " teric patients, as happens in the large inteſtines, and particularly in the " colon." I confeſs indeed, that in moſt of the obſervations, among which are even thoſe two of the celebrated Fantonus (*f*), it was found to be ſo, and I ſhould readily believe Panarolus, when he ſays that it was equally ſo, in the diſſection of all that conſiderable number of thoſe " bodies," to which he refers: and I ſhall alſo agree with his reaſoning upon the ſubject, that a corroding humour may very eaſily flow on, in the ſmall inteſtines; but that in the colon, it as eaſily ſtagnates, by reaſon of the cells: and I would even add, that a corroding humour is often temper'd, and made much milder, in the ſmall inteſtines, by the mixture of chyle, and more often by a mixture of the watery, and mucilaginous, portion of the remedies, that are taken in; but that the humour goes down into the large inteſtines, after theſe meliorating fluids have, chiefly, been taken up, by the chyliferous veſſels. All theſe things, I ſay, I ſee and confeſs: nevertheleſs, to omit other methods of reaſoning, by which I might ſhow, that the very oppoſite ſuppoſition may ſometimes take place; there can be no force of reaſoning ſufficient, I do not ſay, but there can even be no number of obſervations, whatever, ſufficient, to prove that what has been really ſeen, at any one time, cannot come to paſs.

17. But whether there are ulcers in the ſmall, or in the large inteſtines; it ſufficiently appears, from all theſe obſervations, that the inteſtines were really ulcerated, in thoſe dyſenteric bodies, from which they were taken. Yet in thoſe dyſenteric patients, whom we have it not in our power to diſſect, are we alſo to ſuppoſe ulcerations for this reaſon, that, as Celſus ſays (*g*), they have diſcharg'd ſome kind of mucous portions, with blood, and ſometimes portions of fleſh, as it were? it is worth while accurately to conſider this queſtion. And formerly, indeed, they did not doubt, but from the very beginning of this diſeaſe, ſome fat bodies were excreted, which they ſuppos'd to be the internal fat of the inteſtines. But this error was refuted, by thoſe who demonſtrated that the fat was not on the internal, but on the external, ſurface of the inteſtines, and with them by Caſpar Hoffmann (*h*), who alſo ſhow'd that a certain whitiſh body which had been diſcharg'd from the inteſtines, and was brought to him in a dry'd ſtate, was taken for fat without reaſon, becauſe it did not, in the leaſt, take flame, when applied to a flame, and emitted a ſmoke which was perfectly inodorous. At preſent, however, as ſome ſubſtances, which were diſcharg'd in the ſame manner, have been found to be really adipoſe, from an experiment of this kind made by Tulpius (*i*), and Stalpart (*k*), there are not wanting learned men, who teach

(*c*) N. 15.
(*d*) N. 2.
(*e*) Obſ. 15.
(*f*) Supra, n. 13.
(*g*) Supra ibid.
(*h*) Apolog. pro gal. l. 2. ſ. 4. c. 122.
(*i*) Obſ. med. l. 3. c. 18.
(*k*) Cent. 1. obſ. 61.

that

that they muſt, " without doubt," have proceeded from the fat, which is on the external cellular coat of the inteſtine.

Yet to me, where there is no ſuſpicion either of conſumptive colliquation, or of a deep ulceration of the inteſtines, it will ſeem leſs improbable to account for theſe diſcharges of fat, in concert with Stalpart, and Riverius, whom he quotes (*l*), from fat being plentifully eaten, and not concocted; though I might, perhaps, allow of fat being brought, quite from that cellular coat, when I have found that there are ulcers, which open a paſſage ſufficient for this fat to get into the cavity of the inteſtines, provided it be certain, that this fat does not then come forth, in the form of pus, or ichor. But becauſe the inteſtines are ulcerated; much more ſeldom in dyſenteries, and much later in the courſe of the diſeaſe, than this white matter, which was ſuppos'd to be fat, appears; what ſhall we then ſay it is, or from whence ſhall we ſay it proceeds? Without doubt it muſt be mucous, as Celſus alſo call'd it, agreeably to what I have ſaid a little while ago, and as the moderns call it, if it be not very thick; but if it be very thick, we muſt even ſuppoſe it to be polypous.

For, as the glands of the bladder, when irritated, ſecrete a greater quantity of humour, and not of the ſame nature with that which they ſecrete in perfect health, ſo the glands of the inteſtines, likewiſe, ſecrete a greater quantity of humours, and of a different nature; for which reaſon, in both caſes, a white and mucous matter appears. But if there be, moreover, that diſpoſition, in the blood, of eaſily coaleſcing into polypi, this humour will be more prone to concretion; and that ſo much the more, where blood of this kind having exſuded, or having been extravaſated into the cavity of the inteſtines, has been added thereto. For thus, while a part of the blood ſhall remain in the cells of the colon, the watery part being taken up, and the red part ſubſiding, thoſe fibres of the blood, as they are call'd, which will be left behind, may be eaſily compacted into polypous concretions, and by reaſon of their whiteneſs, when, ſoon after, diſcharg'd with the excrements, may be taken for fat here alſo, as they were, formerly, ſo often in the heart and the veſſels, where they belied the appearances of veſſels, and organiz'd parts, and deceiv'd the inſpectors.

18. In either of theſe ways then, or in both of them, or even in any other way, among thoſe that Lanciſi has pointed out (*m*), according to the various conſtitution of the patient, and according to the various nature of the diſeaſe, and, finally, according to the time, place, and manner, in which the lenteſcent matter is retain'd, and diſpos'd, not only the origin of thoſe fat bodies, as they ſeem'd to be, but alſo of the ſhreds of membranes, and even of large membranes that are ſaid to have been diſcharg'd, may be underſtood, and the origin of ſome of thoſe bodies, that are call'd fleſhy by Celſus, may be very eaſily accounted for, that is to ſay, if the whole portion of red blood be not preſs'd out, from its white, and coaleſcent, fibres. And from hence you may alſo perceive, how cautiouſly we ought to uſe that prædiction of Hippocrates (*n*): " if a perſon labouring under a dyſentery, diſcharge a " kind of caruncles, as it were, 'tis a mortal ſign:" nor, indeed, was this

(*l*) In ſchol. ibid. (*m*) Diſſ. de tripl. inteſt. polypo. (*n*) S. 4. aph. 26.

caution overlook'd, by him who treated, with great perſpicuity, of polypi, I mean the very learned Paſta (*o*).

But that which we now call a mucous, or polypous, matter, the ancients were, in general, accuſtom'd to call pituitous, and viſcid, and ſome of theſe were even us'd to acknowledge thoſe things, which I at preſent inſiſt on. Thus not to turn to the moſt ancient of all, I obſerve that Jacobus Berengarius (*p*) has written the following words: "and I myſelf have ſeen, that "concretions, like pieces of thick leather, have been generated in my inteſ-"tines, from pituita, and in like manner, a pituitous fleſh, in ſome meaſure "red, and equal, in ſize, to a pretty large nut." And Fernelius ſuppos'd the matter of a firm body, which was a foot in length, and pierc'd through with a middle duct, to be of the ſame kind; which body was diſcharg'd by the ambaſſador of the emperor Charles the fifth, who was, by that means, reſtor'd to his former health. I ſay nothing of Gabucinus and Platerus, whoſe opinion was taken notice of by Sennertus (*r*), nor was unknown to Lanciſi, when he readily confeſs'd (*s*), that both of them had aſſerted that before them, were no inſtances of the tœnia, or tape-worm, which is a kind of inteſtinal worm.

But Sennertus himſelf, I commend ſtill more (*t*), becauſe he ſuppos'd that the membranes, which were diſcharg'd, from dyſenteric patients, who recover, were nothing more than "mucous excrements, that receive this form "in the inteſtines:" and that it was by no means neceſſary, to ſuppoſe that this mucus ſhould always be excreted, either in its own proper form, or in the form of blood, mix'd with this mucus; but that it may put on another form; for, ſays he, "we ſee every day, that the fibrous part of blood, when "thrown into warm water, grows white."

Yet you ſee how much nearer, that which Zollicofferus (*u*) did at length more expreſly throw out, in the year 1685, comes to this point; I mean when diſcourſing of thoſe polypi, which are found without the blood veſſels, or reſervoirs, and among them, of a polypus then found by Sponius, in the pelvis of the kidney, "to which claſs," ſays he, "even that pituitous con-"cretion might perhaps be refer'd which Juſtus Lipſius diſcharg'd by "ſtool, in the ſhape of the inteſtines, and believ'd to be the very inteſ-"teſtines themſelves." And this opinion was at length very particularly, and clearly illuſtrated, and confirm'd, by Lanciſi, in many different ways, and not after the manner of one who had any doubts upon the ſubject.

19. It appears therefore, that in a dyſentery, bodies conſiſting of fat in appearance, and bodies ſeemingly fleſhy, and membranous, may be equally diſcharg'd from the inteſtines, without any ulcer having affected them: although Sennertus (*x*) denies, that he and Crato "could ever ſee ſuch mem-"branes, and jagged pieces of membranes, as others deſcribe," even where there were ulcers. For theſe, certainly, had been ſeen, in thoſe patients, whoſe recoveries deſcrib'd by Meichſnerus (*y*), and Saxonia, ſeem'd to him

(*o*) In not. ad hunc aphor.
(*p*) Super. anat. mundin. comm. 7.
(*q*) Pathol. l. 6. c. 9.
(*r*) Medic. pract. l. 3. p. 2. ſ. 2. c. 7. qu. 3.
(*s*) Diſſ. cit. epiſt. 2. ad Bianciard.
(*t*) Qu. cit.
(*u*) Diſſ. de polypo cord. §. 6.
(*x*) Qu. cit.
(*y*) Apud Schenck. obſ. med. l. 3. ubi de dyſſent. cur. obſ. 4.

but

but little credible. For the patient of the former, had often diſcharg'd, together with pus, membranes " of the length of a ſpan," and the patient of the latter, a membrane from the ulcerated rectum, " of the length of an ell."

Indeed in this pantheon, which Sennertus quotes, I ſhould ſuppoſe that what is publiſh'd under his name (*z*), deſerves but little to be attended to, after the juſt complaints of Saxonia, againſt the publiſher of it, Uffenbachius (*a*), eſpecially as in the practical lectures of Saxonia, which were afterwards publiſh'd here, nothing of that kind has been found by me, but this only (*b*); with which Sennertus is alſo diſpleas'd; that Saxonia " had ſeen four dyſen-" teric patients, in whom ſo large portions of the inteſtines were, every " day, excreted, that they often exceeded the meaſure of three or four " inches," out of whom two women recover'd. And one of theſe perhaps was ſhe who, as Caſpar Hoffmann (*c*) ſays, was ſhown to him at Padua, by his præceptor Saxonia, and who, in a dyſentery, had diſcharg'd a part of the inteſtine to the " length of a ſpan," that is, as I ſuppoſe, if all theſe excreted portions were ſuppos'd to be join'd together. Yet there Sennertus has done extremely well in openly confeſſing, " that many things might " happen, which he had not ſeen." And indeed, if a very few years had been added to his life, he would have read the obſervation of Tulpius (*d*), who ſaw it happen from ſevere pains, and ulceration of the inteſtines, that the whole internal membrane of the rectum was ſeparated from the inteſtine, in ſuch a manner, that being pendulous from the inteſtine, it might be ſeen by him and by many phyſicians, for two or three days together, its total ſeparation being for ſome time prevented, by a firm adheſion, to the parts about the anus.

It alſo happen'd to me here, on the firſt of June, in the year 1729, that I was earneſtly deſir'd to aſſiſt with my advice, one Jacob del Vecchio, a Jew merchant, on account of a ſimilar caſe. This man had been attack'd with a very troubleſome pain at the rectum, in the decline of a malignant fever, together with a ſenſe of weight, and obſtruction: and finally, a thickiſh kind of membrane, as it ſeem'd, had lately begun to come out from the anus, which I ſaw hanging from thence; its length was equal to the breadth of ſix fingers, and its width exceeded an inch, its colour was cineritious, degenerating into livid, like that of membranes, which are affected with gangrene: yet it did not fall off, in conſequence of being continued within the inteſtine, and connected to it, as far as the ſurgeon could obſerve, by examining very gently; for although, from the time of its exit, the pain was become milder, yet the blood iſſued forth now and then, and the fever was more conſiderable at that hour, than it had been in the morning.

Wherefore, having ſettled what ſeem'd proper to be done, in concert with the phyſician of the patient, who was my ſenior, I departed. And from him I was inform'd, on the following days, that the membrane had come away, being rather ruptur'd, by the conſtriction of the ſphincter, as it ſeem'd, than ſound: that blood, and an ill-condition'd ichor, had again

(*z*) Panth. l. 3. c. 23. ut citat. Sennert.
(*a*) Vid. Saxon. præf. ad libros 3. de Pulſib.
(*b*) P. 2. c. 19.
(*c*) C. 122. cit. ſupra ad. n. 17.
(*d*) Obſ. med. l. 3. c. 17.

iſſu'd

iſſued out; and that a ſingultus, which terrified every body, had come on: nevertheleſs, that he had ſome little hope remaining, for this reaſon, becauſe he remember'd that the father of the patient, who, when he was pretty far advanc'd in years, had had a ſimilar, but a ſhorter, membrane come from the rectum, eſcap'd with life under his care, though with this inconvenience, that he could never retain his excrements afterwards: and becauſe the ſon, although in the father no malignant fever had preceded, and no ſingultus had come on, was as yet ſcarcely five and forty years of age.

Nor was this well-reaſoning phyſician, whoſe ſirname was *Marina*, deceiv'd in his hope, with whom having again ſettled theſe things which, as the ſtate of the caſe then was, were neceſſary to be added to the former, it happen'd that a great quantity of pus being diſcharg'd, I ſaw the patient out of bed, on the ſixth day of July, now manifeſtly recovering his ſtrength, colour, and habit of body, and not only retaining his fæces, but even healing injections, which were thrown up. There was ſome pain indeed even then; but this was evidently more ſlight, nor was it any longer very troubleſome, in that ſame ſituation where it had been before. Wherefore this patient alſo, as well as that of Tulpius, and others, whom, for the ſake of brevity, I purpoſely paſs over, recover'd, and even was ſtill living, and in good health, when I dictated this hiſtory, from my manuſcripts, which was about the end of the year 1747 (*e*).

20. But although it is very certain, that theſe patients eſcap'd with life, yet if you aſk me whether it is equally certain, that they diſcharg'd real membranes, I ſhall readily anſwer, no. Nor indeed do I ſee that the nature of them has been ſufficiently enquir'd into, which perhaps it was not poſſible for others alſo to do, as it was not poſſible for me, in bodies that were corrupted, and rotten, with putrefaction. And I ſee, that even where the inteſtines are ulcerated, polypous concretions may be more readily form'd in that place, either in a round form, ſuch as Lanciſi (*f*) has affirm'd that he had ſeen diſcharg'd by dyſenteric patients, equal to three or four ſpans in length, or flat, in the form of a membrane, one of which kind the celebrated Joſeph Ant. Pujatus (*g*) ſaw diſcharg'd by a matron, who labour'd under an ulcer of the rectum, the length of which membrane was almoſt equal to a ſpan, and which he ſuſpected to be of the ſame nature.

But as I deny that it is certain thoſe former ſubſtances were membranes, ſo I deny its being certain that they were not membranes, and eſpecially thoſe which ſeem'd to adhere to the inteſtine, more than polypi are wont to do. And to confeſs my opinion to you openly; I believe that any part of the internal coat, of the inteſtines, may be ſeparated by the force of diſeaſe, and come away, juſt as we often ſee it happen to that thin membrane, with which the parts of the mouth are inveſted, from the contact of very hot aliments. And this is certainly done without any, or at leaſt without any very conſiderable, effuſion of blood, without convulſions, and other dangerous ſymptoms, which ſome fear from the innumerable ſmall veſſels, and nerves, that go to the internal coat of the inteſtines, if this be really ſuppos'd to be ſeparated; whereas a very great number of ſmall veſſels, and ſmall nerves alſo, go to the internal coat of the mouth in like manner.

(*e*) Imo vid. etiam epiſt. 65. n. 6.
(*f*) Diſſ. cit. epiſt. 1. ad Bianciard.
(*g*) Dec. med. obſ. n. 6. obſ. 1.

Nor would I have you ſay, that the thin membrane which is then ſeparated in the mouth, is a continuation of the cuticle, or is at leaſt, proportionably, correſpondent to it. For the ſame perſon who call'd this *epithelia* in the prolabia and cheeks, ſhow'd that there was alſo a ſimilar *epithelia* in the gula, ſtomach and inteſtines; and this perſon was Ruyſch (*h*): wherefore, if you will not ſuppoſe me to ſpeak of any other part, at leaſt ſuppoſe me to ſpeak of this, which the acrimony of the humours, or a ſuperficial gangrene, after an inflammation, has looſen'd from the remaining part of the internal coat, and left to be involv'd in the excrements, and carried downwards. But ſometimes, you will ſay, membranes which are depoſited are "pretty thick," as Saxonia ſays (*i*); and the cuticle is thin. And ſo it certainly is, unleſs it be embrew'd with a large quantity of humours; for hence the celebrated Fantonus (*k*) judg'd it to happen, that we often ſee it grow ſo very thick, from the uſe of bliſtering applications, as to become from thence, according to his conjecture, diviſible into many laminæ, or to conſiſt of a ſpongy ſubſtance.

But if you contend, that even in this way, the matter is not ſufficiently explain'd by me; I then beg of you, in your turn, to explain to me the obſervation of that very experienc'd ſurgeon Benevolo (*l*), of a membranous canal being taken away from the anus, equal in length to ſix inches, as broad as the rectum generally is, and ſo thick, that the ſphincter ani ſeem'd univerſally, or almoſt univerſally, to have come away with this canal: and indeed, it was neceſſary to make uſe of medical, and chirurgical, remedies, for almoſt the ſpace of a year, in order to heal up the ulcer of the inteſtine, and to remove the other inconveniences, which depended upon the ſeparation of this tube, as well as to obviate the incapacity of retaining the excrements, which remain'd in conſequence of this ſeparation. For in the ſame manner that you imagine you can conceive, how ſo thick a part of the inteſtine could be ſeparated, without deſtroying life, you will much more eaſily conceive, how the internal coat which is ſo much leſs thick, may have been ſometimes ſeparated. And if you readily allow of this even in thoſe who have recover'd, how much more readily muſt you allow of it in thoſe who have periſh'd? And if you had been preſent with the ſoldier of whom Bontius ſpeaks, or with thoſe patients of whom Sylvius ſpeaks, each in this eleventh ſection of the Sepulchretum (*m*), and had ſaid that the membranes, which they, certainly, diſcharg'd in a dyſenteric flux, that was fatal to them, were really pieces of the internal coat; do you think you would have had reaſon to retract your opinion upon opening their bodies after death? Not in the leaſt. For you would have found, with Sylvius, that the internal coat of the inteſtine was, "here and there, abraded," and with Bontius, that it was "quite abraded."

But was this abraſion univerſal? What Bontius does not ſay expreſly enough, Piccolhominus (*n*) ſays, in an obſervation, which, in whatever way it is underſtood, was certainly worthy to have been copied in the Sepulchretum. For he ſaw, "in a dyſenteric patient, who ſuffer'd very excruciat-
"ing pains, and who always ſhiver'd with a kind of horror, upon taking

(*h*) Theſ. anat. 7. n. 40.
(*i*) C. 19. ſupra ad n. 19. cit.
(*k*) Anat. corp. hum. diſſ. 2.
(*l*) 18. delle quaranta.
(*m*) Obſ. 6. & 16.
(*n*) L. 2. anat. prælect. 15.

"the

" the firſt morſel of food, the whole internal coat of the ſtomach, and in-
" teſtines, from the upper parts to the lower, (wonderful to ſee, and to hear,
" and almoſt too wonderful to be believ'd) abraded; and that which was
" left, and appear'd, ſeem'd fleſhy, from the mouth of the ſtomach, quite
" to the extremity of the rectum, ſo that you would ſay it was a kind of
" broad faſcia, univerſally fleſhy; and that the ſtomach, alſo, was a kind of
" bladder, as it were, univerſally fleſhy." But of this obſervation mention will alſo be made hereafter (*o*), in which, as thoſe things, that he ſubjoins ſoon after, ſhow, the author himſelf acknowledg'd an inflammation of the fleſhy fibres.

21. Now then, as it is more than ſufficiently ſhown above, that thoſe bodies which are diſcharg'd by dyſenteric patients, in the form of membranes, ſometimes are real membranes, but often are falſe membranes, and that they are no proof of the inteſtines being ulcerated, unleſs they are found to be real membranes; it would remain to demonſtrate the ſame things, in proportion, of thoſe alſo, that are diſcharg'd with a fleſhy appearance, if it had not been, already, ſufficiently ſhown above (*p*), how polypi may, in like manner, reſemble theſe fleſhy excreſcencies, or caruncles, without any ulceration of the inteſtines. One thing only, therefore, remains to be demonſtrated; I mean, that theſe bodies are not always entirely made up of a falſe fleſh, and when it ſhall certainly appear, from the examination of them, that they are ſo, ſome ulcer of the inteſtines is then to be ſuppos'd, provided there is no ſign of an ulcer in the ſtomach: and this exception I make on account of thoſe verrucæ, as the Arabians call'd them, of which I have treated in the twenty-ninth letter (*q*).

For although I have ſaid that fleſhy excreſcences may exiſt there, without ulceration; I have not, however, denied that when they are broken off, and come away, an ulcer is form'd in the place from whence they were torn; and indeed that an ulcer muſt happen in this caſe is a ſelf-evident propoſition. Moreover I ſpoke, at that time, of the ſtomach, in ſuch a manner, as to allow what I ſaid to be transfer'd to the inteſtines, and I even ſuſpected that a certain verruca of Avenzoar's, was not generated in the ſtomach, but in the colon that lies beneath it, on account of the bigneſs which it ſeem'd to have in the ſtomach, if you preſs'd upon the epigaſtric region. Which ſuſpicion I am pleas'd here ſo to confirm, by examples of the ſame kind in general, as to demonſtrate, at length, that which I have advanc'd.

Jo. Baptiſta Corteſius (*r*), producing a paſſage of Galen, from which it may be underſtood, not only that indurated fæces, but alſo that " a bulk
" of any body whatever, præternaturally exiſting in the inteſtines," had already been reckon'd, by him, in the number of the cauſes that obſtruct the bowels, has confirm'd the opinion of Galen, by this obſervation of his own, which was made upon the body of the Count de Caldarinis, a nobleman of Bologna. That is to ſay, " in the cavity of the colon, was found a large
" portion of fleſh, which, by its bulk, was the cauſe of impediment to the
" deſcent of the fæces, and by a diſorder of this kind, which was a conſe-
" quence of that obſtruction, the patient was carried off. Which cauſe,
" being, as the author himſelf ſays, worthy of particular attention," I was willing to deſcribe in his own words, for this reaſon alſo, becauſe in the

(*o*) N. 26.
(*p*) N. 17. & 18.
(*q*) N. 16. & 17.
(*r*) Miſcell. med. dec. 4. c. 8.

catalogue of thoſe authors, whoſe obſervations are transfer'd into the Sepulchretum, I have in vain ſought after the name of Corteſius, as I did that of Piccolhominus likewiſe: neither is this obſervation found any-where in the thirteenth ſection, which is entitled *De adſtrictione alvi*; but inſtead of it, a certain obſervation is taken notice of from Willis (*s*), as if it were certain "that a kind of fleſhy excreſcences, which adher'd to the larger inteſtines, "like the ears of a mouſe, coming out in great number, and in twins, from "both ſides of the colon and rectum, and at certain diſtances from each "other, like the branches of a tree," as if, I ſay, it were certain that theſe were not on the external ſurface, as they ſeem to me to have been, and were, perhaps, nothing elſe but the adipoſe appendicles of the colon, and rectum, in which, the fat being conſum'd, the ſanguiferous veſſels appear'd red; for theſe things Willis obſerv'd in a conſumptive man, and ſays that he had ſeen "ſomewhat ſimilar to this likewiſe in another conſumptive body."

But, juſt as if it had been certain, that theſe excreſcences had been on the internal ſurface of the inteſtines, and thus had brought on an aſtriction of the bowels, the caſe of a little boy is ſubjoin'd in the ſcholium, who, having diſcharg'd a large fleſhy maſs, that preſerv'd the mark, by which it had adher'd to the inteſtines, was freed from an obſtinate obſtruction of the bowels. But you, however, by turning either to Willis, or to the other book of the Sepulchretum (*t*), in which the hiſtory of that man is given more at large, will not only be convinc'd of what I have ſaid, but will, in particular, perceive this, that in a man who was ſeiz'd "with a ſpurious palſy, which affected "every limb of the whole body," ſo that he had ſcarcely any power of moving himſelf, there was no great occaſion to aſſign any other cauſes beſides this, for the bowels being coſtive, unleſs irritated.

But to return to the excreſcences, that certainly were in the cavity of the colon; beſides that "fleſhy" one, which I look for in vain, in the Sepulchretum, remark'd by Joannes Rhodius (*u*) in a monk, who, "being troub-"led with colic pains, together with a vomiting of chyle, diſcharg'd his "glyſters back again, without any excrement," by reaſon of "the colon "being obſtructed by this fleſhy excreſcence;" there is an example of one, which very peculiarly relates to the preſent queſtion, in the ſecond of theſe two obſervations of the celebrated Fantonus, which I only mention'd above (*x*).

In a man whom a violent dyſentery had, at length, carried off, "he found "the colon ulcerated, not far from the cæcum, from which flow'd a hu-"mour of a purulent nature, mix'd with blood; and there he found, be-"ſides this, a fleſhy, thick and round body, almoſt eight inches in length, "which, taking its riſe by a ſlender beginning, and being connected by "that only, as by a peduncle, to the ulcerated coat, had the other part of "it pendulous in the inteſtinal tube, and taking up the greater part of "that tube: you would have ſaid, ſays he, it was a large polypus of the "inteſtine; for the whole of this body exceeded the weight of a medical "pound." You ſee that this excreſcence was attended with an ulcer, and

(*s*) Obſ. 1. §. 4.
(*t*) I. ſect. 13. obſ. 1.
(*u*) Act. Hafn. vol. 4. p. 1. pag. 86.
(*x*) N. 13. & 16.

without

without doubt arose from an ulceration being continu'd through this long dysentery: and it could not be call'd a great polypus for this reason, that it had the nature of those polypi, which are spoken of above, but because it resembled a polypus of the nose, which is so call'd from its similitude to a polypus, not only in its figure, but in its nature also; for this that skilful and cautious anatomist pronounc'd to be fleshy.

22. Yet I do not doubt, but excrescences of the intestines may sometimes consist of both natures; as for instance, if to fleshy fimbriæ, which are not equal, or smooth, on their surfaces, particles of viscid pus, or intestinal juice, or extravasated blood, begin to adhere: and to these others, and still others, are added afterwards, so that the root and the nucleus may consist of real flesh, but the body of the mass that lies round it, or is added to it, and the appendages, may consist of that which has the appearance of flesh, and is not so in effect.

I was consulted, in the year 1736, for a nobleman, who, after having frequent discharges of blood by stool, join'd soon after, with a bilious flux of the intestines, and with a continual fever, which was, at first, slight, and after that acute, when this fever, and its violent symptoms, did not at all remit, from the use of the most suitable remedies, and even when that symptom, which was more violent than any of the others, I mean the pain of the belly, was of a sudden become extremely severe, had discharg'd, after a great quantity of blood, and by the help of the surgeon's hand, a certain body almost of the length of a span and half, but of a different thickness, and figure, in different parts. For on the upper part, it resembled an ugly head, as if that of a pretty large frog, with the mouth gaping; the other part of the body was almost round externally, internally hollow, and was two inches thick, till growing slender, by degrees, it terminated in a tail of a considerable length, and bifid, near its extremity.

If you remember what my opinion was, in almost the latter end of the preceding letter (*y*), of frogs, toads, and lizards, being discharg'd from the intestines, you will easily imagine what I thought, when I read this account that I have given you: nor was there any occasion, here, to suspect what you will read in the history of a certain miller (*z*), whose dissection is otherwise worthy of inspection, on account of chylous excrements having been constantly discharg'd, for a year and half together, and of being compar'd, for the sake of finding out the truth, with what I have hinted above (*a*), upon the cæliac flux. But a toad was said to have crept in at his mouth, when he was asleep, and to have done much mischief within, till at length it was discharg'd by stool, in an over-grown state, and dead: which toad I could wish the excellent author of the observation had not been deter'd by the very filthy, and noxious stench, from attentively examining into, and not only by the eye, but with the assistance of the knife.

As far, however, as relates to our case at least, the learned physician, also, by whom I was consulted, made no hesitation, in contempt of vulgar opinions, to suppose that a body of this kind was of the nature of the polypi of Lancisi. Yet, as besides the external fibrous ligaments, by which it seem'd

(*y*) N. 21. (*z*) Eph. n. c. cent. 3. & 4. obs. 163. (*a*) N. 4.

to

to have been connected with the inteſtines, he deſcrib'd a ſoft and diſtractile ſubſtance, almoſt of a black colour, whereof it conſiſted, and that made up of pretty ſtrong fibres, with various glands lying betwixt them; and as he mention'd that the blood, which had flow'd frequently before, to the quantity of ſome pints, had ceas'd to flow, upon the removal of that body, and that purulent, whitiſh, almoſt cineritious, and extremely fœtid, matter had ſucceeded, which ſometimes preceded the diſcharge of the excrements, and ſometimes follow'd them, and always with very great pain, and that theſe ſymptoms, and the acute fever, had continu'd, till, vulnerary remedies being given, which were afterwards ſucceeded by balſamics, theſe, and the other diſagreeable ſymptoms, were firſt diminiſh'd, and at length quite remov'd; ſo that the patient (who liv'd many years after) deſir'd nothing more of me, than to adviſe ſuch methods, as might tend to preſerve him from the return of this diſorder: I was ready in my own mind to conjecture, that the beginning, and roots, of this body were excreſcences, that had been form'd near the extremity of the colon.

For this ſituation was pointed out, by that very ſevere pain, which, without doubt, began below the navel, in the part where the colon generally has a kind of flexure, before it terminates in the rectum, and from thence, following the adheſions of the meſocolon, was extended quite to the back. I ſuppos'd therefore, that theſe roots, when they began to be eroded, ulcerated, and torn off, had pour'd out blood, and moreover, that when they were ulcerated pretty deeply, and all round about, the pain, and the other ſymptoms, had come on: and that, in the mean while, the fibrous and other viſcid parts, of the blood, as it drip'd down, had adher'd to the excreſcences, and increas'd their ſize, and by this means brought them into contact with each other, and form'd them into that ſhape, and appearance, which they had, when entirely pull'd away, and diſcharg'd. Yet as out of all the bodies of this kind, that I have read of, as being diſcharg'd from the anus, I can at preſent call to mind only one, and that ſpoken of by Peyerus (*b*), which was "furniſh'd with blood-veſſels;" and as where I plainly ſee any body to be furniſh'd with theſe veſſels, I ſhall pronounce that it is, certainly, to be refer'd to the claſs of excreſcences; ſo, on the other hand, as I very well know, how eaſily we may be deceiv'd, and impos'd upon, in various ways, by polypous concretions, I ſhall anſwer only by ſuſpecting, and conjecturing ſomething of this kind, in regard to the others, which either are without theſe true veſſels, or are not acknowledg'd for true excreſcences, by the judgment of a cautious and experienc'd ſurgeon.

Thus I formerly gave credit to Valſalva, when examining, in conjunction with me, a bloody ichor that was diſcharg'd by a dyſenteric patient, whoſe life was deſpair'd of, and finding therein a kind of little ſubſtance, which, if you conſider'd only the colour, ſeem'd to be nothing but a ſmall coagulum of blood; he, after enquiring into it very attentively, and conſidering it thoroughly, pronounc'd, without any heſitation, that it was a ſmall excreſcence of the ulcerated inteſtine. So, alſo, I ſhould have given credit to the

(*b*) Exercit. I. de gland. inteſtin. circa finem.

very ſkilful Molinelli *(c)*, if he had pronounc'd a hollow body, of a ſpan in length, which a man who was afflicted violently, and for a long time together, with a dyſentery, had himſelf drawn out from the rectum, to be "from "the fungous fleſh of ulcers," though he, in conſequence of his great prudence, and caution, would by no means do this, but only ſaid, that it was "not unlike" ſuch a kind of fleſh. And perhaps the celebrated Struvius *(d)* had his eye to nothing elſe, ſince, when he deſcrib'd "a membranoſo-carne-"ous kind of maſs," as he expreſsly calls it, of equal length with the other, of an inch in thickneſs, and "interwoven with a great quantity of fat," which was diſcharg'd from the anus, by a very violent ſtraining; he was willing, as I ſuppoſe, to ſhew his own doubts, by prefixing this title, *De Maſſa Polypoſa per anum excreta*, to his obſervation: and yet ſuch things had preceded, as might have given, as well as the dyſentery itſelf, a juſt ſuſpicion of a fleſhy excreſcence.

23. While I have been ſhowing thus far, that in a dyſentery, adipous, membranous, and fleſhy, bodies may be diſcharg'd, and yet that the inteſtines are not ulcerated, for this reaſon, becauſe theſe bodies often ſeem to be what they are not; I have fear'd now and then, leſt you ſhould, perhaps, wonder, that I do not ſeem to think an eroſion, or rupture of veſſels to be prov'd, even from the mere diſcharge of blood; ſo that an ulceration, either already form'd, or at leaſt begun, muſt of courſe be acknowledg'd. But if you have wonder'd, you will immediately ceaſe to wonder, when you attend to thoſe things that I ſhall touch upon in a few words.

There is an obſervation of the celebrated Wagner *(e)*, in which, he not only deſcribes ſeveral appearances found by him, in the viſcera of a dyſenteric woman, and amongſt theſe, that which ought to be remark'd in favour of Spigelius *(f)*, "that the gall-bladder was turgid," but this alſo, in particular, that the inteſtines had, no where, any marks of diſeaſe, except that all "the ſmall and large inteſtines were equally ſtrip'd of the mucous hu-"mour, with which they are generally cover'd," and the rectum was gangrenous. But if he had obſerv'd any little ulcer in theſe parts, he then ſhould not have look'd for the paſſages of the blood, which the patient had diſcharg'd, in thoſe extreme orifices of the veins, that is to ſay, thoſe which the ſcirrhous glands in the meſentery, and ſpaſms, had conſtring'd, ſo that the blood "regurgitated immediately" through thoſe orifices, into the inteſtines, in the ſame manner as a blue liquor, injected into the ſame veins, did then exhibit to him, "very evident marks of a blue ſweat," within the inteſtines.

Beſides, there is an obſervation of Wharton, given by Gliſſon, in his treatiſe of the ſtomach and inteſtines, which, as it is deſcrib'd ſomewhat differently from the intention of this treatiſe, in the Sepulchretum *(g)*, without referring you to any particular part of it, will, if you read it in the twenty-third chapter, under number eleven, ſhow, that after an "enormous vomiting of "blood, from poiſon, no vein in the ſtomach," which, even after death, contain'd a ſmall quantity of blood," had appear'd to be either ruptu'd or erod-

(*c*) Vid. Comment. de bonon. ſc. acad. t. 2. p. 1. inter medica obſ. 2.
(*d*) Act. n. cur. t. 1. obſ. 195.
(*e*) Eph. n. c. cent. 1 & 2. obſ. 171.
(*f*) Vid. ſupra n. 15.
(*g*) L. 3. ſ. 8. obſ. 7. in additam.

ed,

" ed, but that the internal coat being wip'd away with the back of the knife, " innumerable little bloody points had then gradually appear'd, on the de- " terg'd ſurface." But whether by a wiping of this kind, as Gliſſon thinks, a kind of cuticle, as it were, was abraded, and the poiſon acted in no other manner in the living body, as the internal coat itſelf was ſeen to be bloody, juſt as the cutis appears when the cuticle is abraded; or whether it be more probable that the extreme orifices of the arteries being dilated, by the quantity of blood, which the violence of the poiſon had brought together, had, a little before, pour'd out the blood, and the back of the knife, at that time, preſſing out whatever blood remain'd in them, brought their orifices to view, I would rather chooſe you ſhould judge, from what Boerhaave (*b*) has ſaid, in more than one place, of anaſtomoſis, than that I ſhould determine.

Attend to the example which he there produces, and elſewhere alſo; as, for inſtance, when ſpeaking of the menſtruous blood, which was retain'd, being diſcharg'd by other paſſages, he ſays (*i*), " I have ſeen an hæmoptoe of " this kind, which had grown habitual, ſo that every month a florid blood " was ſpit up, without detriment to health, though join'd with a ſlight cough. " I have ſeen the blood thrown up by vomiting: I have ſeen that it has been " diſcharg'd by ſtool, and by ſweat." Compare, moreover, with each of theſe, the other examples, that the very learned Haller (*k*) adds, in a conſiderable number; and in whichever you find this to have happen'd, " without detri- " ment to the health," ſuppoſe it to have happen'd equally, without ulceration, juſt as when blood was diſcharg'd by ſweat, you would have ſeen the ſkin, in that place, to have been very ſound, nor any other appearance thereon, when deterg'd, but " thoſe innumerable little bloody points," which Wharton ſaw on the internal coat of the ſtomach, when wip'd.

Now transfer theſe reaſonings from the ſtomach, to the inteſtines, and you will conceive how blood may be diſcharg'd, in a dyſentery, without any ulceration of the inteſtines, or, if you are a little in doubt on this head, put that obſervation of Wharton out of the queſtion, at preſent, and beſides the examples which I have given you, call to mind that of blood flowing from the noſtrils. Are the veins, or arteries, always either ruptur'd, or corroded, in this caſe? or is the coat of the noſtrils always ulcerated? If they are ruptur'd or corroded, how does it happen that the blood often ſtops ſpontaneouſly, without the leaſt remedy being apply'd? If they are ulcerated, how does it happen, that no pus, I do not ſay, but that even no pain is the conſequence? Now then ſuppoſe it probable, that the ſame thing may happen, on the internal coat of the inteſtines, which you ſuppoſe to have happen'd on the internal coat of the noſtrils, eſpecially as the fluids, that are injected by the arteries, are ſo eaſily carry'd through either of theſe coats, into the cavity of the noſtrils, or inteſtines (*l*). Suppoſe, therefore, that the quantity of blood is increas'd, that the impetus of it is increas'd, and that the extremities of the arteries, on the internal ſurface of the inteſtines, are made more lax than uſual, and particularly in thoſe in whom they were, before, naturally lax,

(*b*) Prælect. ad inſtit. §. 707. 775, 814, &c.
(*i*) Ad §. 667.
(*k*) In not. ad cit. modo §.
(*l*) Vid. not. Haller. ad §. 497. earund. prælect.

either

either from a kind of paralytic affection, or from ſome other cauſe, as for inſtance, from having been too much moiſten'd, in fluxes of the inteſtines; and you will eaſily conceive with Boerhaave, that blood is diſcharg'd from thence by means of anaſtomoſis.

24. And you muſt not ſuppoſe any one of theſe circumſtances only to take place, but many of them at once. For as Boerhaave thus teaches *(m)*: "when "the blood cannot paſs through the vena portarum, and its branches, then "pure blood itſelf may be extravaſated by an anaſtomoſis, from the meſenteric "veſſels," if he had not immediately added "the orifices of which are dilat-"ed," any one might doubt upon the event, who had read that Ortlobius *(n)*, when he made a ligature upon this vein, in living dogs, "could never ob-"ſerve that pure blood burſt forth on the inteſtines, notwithſtanding the "whole coat of the inteſtines was dy'd, as it were, with a ſcarlet colour." In theſe dogs, without doubt, the mouths of the veſſels were not dilated. But they were very conſiderably dilated, by reaſon of the laxity of the ſurrounding fibres, "in the ſphacelated inteſtines" of that count, of whom this author ſpeaks; for in the inteſtines of this gentleman he ſaw, "the meſeraic "veins having their orifices open, and fill'd with coagulated blood, as if "they had been fill'd with wax." And theſe things I hinted, becauſe in a dyſentery, "ſometimes there is a true inflammation, and a fatal gangrene "follows," as Boerhaave has ſaid a little after thoſe things that I have related *(o)*. And indeed the obſervations of many authors, in this eleventh ſection of the Sepulchretum *(p)*, ſhow that he has ſaid what is true; and beſides that which is produc'd above *(q)*, this other of Valſalva's, alſo, confirms it.

25. A woman died of a dyſentery. The inteſtines were found to be inflam'd. The left kidney was altogether deficient in this woman: but the deficiency was ſupply'd by the right, which was twice as large as it naturally is, and furniſh'd with a double pelvis, and double ureter. And both of the ureters went to the right ſide of the bladder.

26. Setting aſide thoſe appearances which, as it is evident to you, muſt have exiſted from the original formation of the woman; the inflammation of the inteſtines relates to the dyſentery. Now then call back to your memory, and join with this obſervation, and with others, that which I have deſcrib'd above from Piccolhominus *(r)*. For in that, whether the abraſion, which ſeem'd ſo far ſurprizing to the obſervator himſelf, was very great; or rather, whether a conſiderable inflammation of that kind was join'd with the abraſion, ſo that the whole coat of the inteſtines was red, as it was in the dogs of Ortlobius *(s)*; there is no doubt but Piccolhominus, alſo, acknowledg'd an inflammation. And as this cannot happen, but the paſſage of the blood, through thoſe branches of the vena portarum, muſt be ſuppos'd to be impeded; I have already ſaid *(t)* what may be the natural conſequence of this, if any other cauſe be added, even before the inteſtines, by the impetus of the blood ſtill continuing, begin to degenerate into a gangrenous laxity.

(*m*) Ad §. cit. 814.
(*n*) Hiſt. part. & œcon. hom. diſſ. 8. §. 7.
(*o*) Ad §. 815.
(*p*) 3. 9. 19. §. 1 & 2.
(*q*) N. 14.
(*r*) N. 20.
(*s*) Supra, n. 24.
(*t*) Ibid.

Thus Brunnerus (*u*), in a ſoldier, who had been carry'd off by very violent convulſions, which came on, when he already labour'd under a diarrhœa, found through the whole tract of the inteſtines, and eſpecially the ſmaller ones, a conſiderable inflammation, from which even the ſtomach was not altogether free, and, at the ſame time, coagula of blood in the laſt-mention'd cavity, and in the inteſtines a red mucus, which was a very evident proof, that the diarrhœa had, already, begun to degenerate into a dyſentery, although as yet nothing gangrenous appear'd in theſe viſcera. And an inflammation of the inteſtines may eaſily paſs over into a gangrene, and even into a ſphacelus, as I have ſaid: from whence it probably happens, as was related to me, by a very experienc'd phyſician, when I was a young man, that it is not uncommon for the fever, in dyſenteric patients, to ſeem to be quite gone off, for a few days before death, ſo that a phyſician, if he did not attend to other ſymptoms, might be ſhamefully deceiv'd. However, in regard to that very fallacious diſorder of the inteſtines, the ſphacelus, I ſhall have a more convenient opportunity of treating of it hereafter (*x*).

Now in reſpect to membranes being diſcharg'd, either together with blood, or together with pus, or with neither, and theſe either in a dyſentery, or when there is no dyſentery, ſomewhat is to be added to thoſe things that I have ſaid above. Without doubt I have wiſh'd, that the nature of ſome of theſe membranes might have been examin'd into, more accurately. Lentilius (*y*) for inſtance, has exceedingly well determin'd, what inteſtine it was, from whence the membranes proceeded, which were excreted in the ſtools at intervals, with or without blood, and in a greater, or in a leſſer number. But as to his ſuppoſing theſe membranes to be the valvulæ conniventes, every one is at liberty to give credit, or not give credit, to his ſuppoſition; and even to believe, or diſbelieve, this very circumſtance alſo, that they were real membranes. For it appears that he was abſent from the patient, and could have ſeen nothing elſe, but that they were "of a different ſize, and that, "when dried, they reſembled the pellicles of a hog's bladder, when ſhrivel'd up with heat."

But Jo. Maurice Hoffmann (*z*), when he examin'd very attentively membranes that were excreted by another woman, which every other perſon had taken for the internal coat of the inteſtines, found them to be a viſcid mucus, "coagulated upon the valvulæ conniventes, and condens'd into the form of "a membrane:" nor does the opinion of the celebrated Trælingius, in the fifth volume of the Acta Naturæ Curioſorum (*a*), differ from this: for he, on examining a kind of tube, or ſheath, diſcharg'd by the wife of a peaſant, found it to be not really membranous, "although it reſembled the figure "of the colon, with its valvulæ conniventes." On the contrary, Apinus (*b*) made not the leaſt doubt, but the membranes, which were diſcharg'd by another patient, were really pieces of the internal coat: and indeed he has produc'd many reaſons, even from the inſpection of them, why he ſhould be believ'd: although the reaſon which he gave in the firſt place, that they were

(*u*) Exercit. de gland. duoden. §. 4.
(*x*) Epiſt. 35.
(*y*) Eph. n. c. dec. 3. a. 3. in append. n. 6. ad obſ. 68.
(*z*) Dec. ead. a. 9 & 10. obſ. 60.
(*a*) Obſ. 126.
(*b*) Dec. cit. a. 9 & 10. obſ. 179.

"of

" of a form exactly tubular," is not only render'd of no effect, by the obſervation which was juſt now quoted, but alſo by the obſervation of the celebrated Verdrieſius (*c*), who having examin'd, very cloſely, one diſcharg'd by another patient, found it, very evidently, to be nothing elſe but " a fiſtu- " lous pituita, which had concreted together, and accommodated itſelf to " the figure of the inteſtine, wherein it was contain'd."

But muſt we ſuppoſe, you will ſay, that the ſame thing happen'd within the inteſtine cæcum, which Beckerus (*d*) almoſt affirm'd formerly, his having ſeen diſcharg'd by ſtool; that is to ſay, " a membranous body, equal in " length, and breadth, to the finger of a large man, open, and eroded, at one " end, and at the other end ſhut? For he has immediately ſubjoin'd the following words, " made up of a threefold coat, thin, fleſhy, and rugous." Nay, and to go farther, what ſhall we ſay to three other obſervations, in which not the appendix vermiformis, that is on the ſide of the inteſtine, for inſtance, but a conſiderable part of the tube of the inteſtines itſelf, is ſaid to have been diſcharg'd by the anus? I heartily wiſh that George Francus (*e*) had been permitted (for his patient did not ſurvive, as thoſe of Beckerus, and others did, but died a few hours after the diſcharge of it) to examine the body, after death, in order to determine the ſituation, from whence, " an en- " tire part of the ſmall inteſtines, of the length of a ſpan, and what was " more, with a portion of the meſentery, ſtill annex'd to it," had been torn away, which he, by reaſon of the valvulæ conniventes, wherewith it was internally furniſh'd, ſuſpected to be from the jejunum: although if a ſeparation of this kind is to be wonder'd at, the coalition, which we muſt, of courſe, ſuppoſe to have taken place, in two other patients, betwixt thoſe parts of the inteſtine, from whence the intermediate portion was torn away, is ſtill more to be wonder'd at, ſince neither of theſe perſons, if a paſſage had been left open, from the inteſtines, into the cavity of the belly, could have ſurviv'd.

But Jo. Peter Albrecht *(f)*, and Andreus Weſtphal *(g)*, when they produc'd their hiſtories, ingeniouſly imagin'd, that an intuſuſception had preceded, or a prolapſus of the inverted part of the ſuperior inteſtine, within the part next below; ſo that a tearing away of the prolaps'd part did not happen, by means of inflammation, and gangrene, before there was ſome conglutination in the place of the ſeparation, betwixt the receiving, and the receiv'd inteſtine. For as to that which was diſcharg'd, being actually a portion of the inteſtine, although " many doubted" in regard to the firſt obſervation, and in regard to the ſecond Bruckmann, and Hoffmann, ſuppos'd it to be, either only a coat of the inteſtine, or a mucus in the form of a coat; yet witneſſes of the firſt being really ſo were not wanting, and other learned men, and in particular the magnific order of phyſicians at Gripſwald, to whom what was diſcharg'd, in the ſecond obſervation, is ſaid to have been ſent to be examin'd, have pronounc'd that to be real.

(*c*) Ephem. earund. cent. 1. obſ. 90.
(*d*) Earund. dec. 1. a. 4. obſ. 68.
(*e*) Earund. dec. 3. a. 5 & 6. obſ. 177.
(*f*) Dec. ead. a. 3. obſ. 129.
(*g*) Diſput. quæ partem inteſt. jejuni, &c.

One thing I have obſerv'd, which may ſeem to correſpond but indifferently, in either of them, to the ſuppos'd intuſuſception. For the valves, in the inverted inteſtine, ſhould have been found not on the "internal" ſurface, as they ſuppoſe, but on the external ſurface, nor ſhould any portion of the meſentery, or omentum, adhere "externally," but internally: although it may be ſaid, that the ſurfaces were not ſpoken of, as they then were, but as they had been before, in their natural ſtate, or that the inteſtine had been turn'd back into its former ſtate, either while it was carry'd down, through the remaining part of the canal, quite to the anus, or while it paſs'd through the ſtreight paſſage of the anus itſelf, or at length, even by the hands of thoſe who had examin'd it after it was diſcharg'd. Be this as it will, when you have read, and conſider'd, all theſe circumſtances, you will judge what credit is to be given to theſe obſervations: for in regard to me, you are quite at your liberty, to take part either with thoſe who believe, or with thoſe who doubt, or with thoſe who, in ſome meaſure, conſent therewith; and I ſuppoſe you will be leſs ſurpriz'd hereafter, if you hear that any dyſenteric patients have recover'd, even after they have diſcharg'd real membranes, or caruncles, from the inteſtines.

27. Although I have written much more upon the ſubject of the dyſentery, than I had determin'd in the beginning, yet before I come to a concluſion, I have a mind to add ſomething on the ſubject of teneſmus; not in the manner I ſee it is here done in the Sepulchretum (*b*), where it is conſider'd as ariſing from other cauſes, of which I ſhall ſpeak on a future occaſion, but only when it is brought on by the dyſentery. I believe, indeed, that in the end of this flux, the cauſe by which the rectum is irritated to diſcharge its contents, does frequently not conſiſt in the diſorder of the ſame inteſtine, but proceeds from the remains of the acrid mucus, and blood, ſtagnating in the neareſt cells of the colon, eſpecially if there be the obſolete colour of this blood mix'd with the mucus, and it being carry'd down, by degrees, through this inteſtine, and, in like manner, through the rectum, to the lower part of it, which is very impatient of irritation.

It is ſurprizing to conſider how long ſome ſubſtances, even when in no ſmall quantity, nor in themſelves viſcid, ſeem to have been retain'd in the cells of the colon. Inquiry was made of me, in the year 1744, in the name of a learned, and ingenious, phyſician, where I thought that peaſe could poſſibly have remain'd in the belly of a man, five whole months after being eaten? For he aſſerted, that there was a man, in his city, who having eaten them frequently, and in large quantities, in the month of June, and being ſeiz'd in October with a dyſentery, and ſingultus, could not be cur'd of theſe diſorders, till, in the beginning of December, he had diſcharg'd by ſtool, two pounds of peaſe, which were ſo entire, that many of them were preſerv'd as curioſities by admiring phyſicians. And it was ſaid that the ſame thing had happen'd to the father of this man before, only they had not remain'd ſo many months. I anſwer'd, that if this relation were true; for as the ſtory was well-known in that city, and teſtify'd by many, I could not fairly diſpute the truth of it, eſpecially as I had read hiſtories, in medical authors, which

(*b*) Obſ. 29. & ſeq.

were

were much more difficult to be ſuppos'd; and if theſe two men had the ſame ſtructure of the ſtomach, and inteſtines, that others had, I did not ſee how they could ſo eaſily have adher'd, as by being diſpers'd into many cells of the colon: for if they had been join'd together, they would have obſtructed the paſſage through this inteſtine, and ſtill more through the ſmall inteſtines, and would have been very burdenſome, and uneaſy, to the ſtomach, as they were in ſo very conſiderable a quantity, and, as appear'd from the circumſtances, unbroken with the teeth, and perhaps not ſufficiently boil'd before, nor in a green, and tender ſtate, but already grown old, yellow, and hard. That theſe cells probably were, in theſe men, naturally ſomewhat larger than they are in others, and conſiſted of more lax fibres, but that there was ſcarcely any doubt of very viſcid, and tenacious, matter having been contain'd in the tube of the inteſtines, in conſiderable quantity, and that in conſequence of their being accuſtom'd to maſticate their food ſo little; and that the peas being entangled by this matter, and glued, as it were, to the parietes of the cells, had remain'd in this ſtate of adheſion, till they were, at length, looſen'd, and remov'd, from thence, by the tormina of the dyſentery, and the frequent ſtrainings to ſtool.

28. But although in explaining that teneſmus, which ſucceeds a dyſentery, I am often, as you have ſeen, ſo far of opinion with Sydenham (*i*), that I do not allow of an ulcer exiſting in the rectum; yet do not imagine that I ſo far adhere to his opinion, as not to fear ſometimes, leſt an ulcer, or ſome other conſiderable diſorder, ſhould be the conſequence of a dyſentery; as I was warn'd, even when I was a young man, by the event of a certain pain in that inteſtine, after a dyſentery, upon the cauſe of which my preceptors had opinions different from each other.

For as in a woman of the firſt rank, a dyſentery had ceas'd, of itſelf, after about fifteen days, and ſhe always complain'd of a pain in the lower part of the inteſtine, when ſhe had occaſion to go to ſtool, and at other times alſo, join'd now and then, with a kind of troubleſome pricking; one of them ſuppos'd that this aroſe, as it was in a delicate woman, only from a ſlight abraſion of the internal coat; and the other, that is Albertini, who obſerv'd a continual ſenſe of weight to be join'd with that pain, beſides a fever, not without a kind of conſent in the thighs, and the lower part of the loins, but no teneſmus, or ſcarcely any; was afraid of ſomething of greater conſequence, till at length her fever, being increas'd, with a rigor, he openly foretold the ſpeedy appearance of an abſceſs. Which prediction was ſoon confirm'd by the event, pus being diſcharg'd to the quantity of two ounces, and the phyſician who had diſſented, as he was an ingenuous old man, not only confeſſing it, but what few can ſubmit to, even commending the true prediction of the other.

But in regard to a very conſiderable diſorder of the ſame inteſtine, and one that is leſs known among the common people, I ſhall have occaſion to ſpeak of it in the next letter (*k*). Farewell.

(*i*) Obſ. med. circa morb. acut. ſ. 4. c. 3. (*k*) N. 6. & ſeq.

LETTER the THIRTY-SECOND

Treats of Coſtiveneſs and of the Piles.

THE oppoſite diſorder to that of which I lately wrote to you, I mean the diſorder of coſtiveneſs, I have obſerv'd in many perſons, without any evident detriment to health, notwithſtanding ſome are accuſtom'd to have no diſcharges from the bowels, for weeks together, and even (as our celebrated Zeviani *(a)* has alſo obſerv'd) for a month together, and at other times, and that more frequently, join'd with manifeſt injury, of which death itſelf was the conſequence. Nevertheleſs, I have but one obſervation of this diſorder, which is join'd with a diſſection, to deſcribe to you here: for the other obſervations of this kind, as they were join'd with vomitings, volvulus, and other diſorders of that kind, it did not ſeem proper to disjoin from them. And if the ſame thing were, likewiſe, done in the Sepulchretum, the obſervations of this thirteenth ſection would be greatly reduc'd in their number.

For you will ſee it remark'd in moſt of them, in what other ſection that part of the obſervation may be read, that has been taken away from this. But that there are others, in which the ſame remark ought to be made, three pages only, the hundred and ninety-third, the hundred and ninety-ſeventh, and the two hundred and third, if you turn to them, will clearly demonſtrate. For if you read in the firſt, the ſecond article of the third obſervation, you will naturally ſuppoſe that it belongs only to that place. But the third article will immediately ſhow you, that the ſame is given twice over, and ſtill more, that what is deficient in both, is to be ſought for elſewhere, that is in the eighth ſection of this book, in obſervation the fifteenth.

A ſimilar repetition will be prov'd, in the ſecond of thoſe pages I refer'd to, by comparing the ſecond article, of the ninth obſervation, with the eighth article of the ſame; for we are not to ſuppoſe, that becauſe by a ſhameful typographical error in the letter it is ſaid "in the left ſide under the region of "the liver:" the caſe is not the ſame which in the former is properly deſcrib'd, by ſaying, "in the right ſide," for that it is ſo, will be clearly demonſtrated to you, by turning to the next, that is the fourteenth ſection, which is there refer'd to, and in which this hiſtory is given, ſomewhat more at large, under article the firſt of the eighth obſervation.

Finally, the third of thoſe pages that I pointed out, will immediately ſhow what is repeated, and what is nevertheleſs omitted, when you ſhall have

(a) De ſitu, &c. l. 2. c. 11.

compar'd article the ninth of the twelfth obſervation, with article the third, and both of them with the ſeventh ſection, to which you are in the letter deſir'd to turn, where you will read the caſe deſcrib'd more at large, under obſervation the thirty-third.

But let it be ſufficient to have pointed out theſe repetitions, which are ſo near one to another. However out of the more diſtant ones, that I leave to be enquir'd into by you, I cannot help taking notice of one, which, by reaſon of the uſual little arts, and deceit of Blancardus, is not very eaſily detected. Read, I beſeech you, the ſixth article of the firſt obſervation, and compare what Formius has related of the ſhoemaker, with thoſe things which, in the third obſervation of the additamenta, Blancardus has ſaid of the porter: and you will perceive that the hiſtory is the ſame in both places; but that the ſhoemaker of Formius was chang'd into a porter by Blancardus, that the trick might not be found out. And if in writing to you I frequently detect artifices of this kind, of which he has been guilty, I do it for this reaſon, that you may withhold your aſſent, when you ſhall read in the writings of an author, in other reſpects, learned, that Blancardus, indeed, " in " his *anatomia reformata*, had been guilty of plagiariſm which was ſcarcely " excuſable . . . But that the *anatomia practica rationalis*, of the ſame author, " deſerv'd a greater ſhare of praiſe," that is to ſay the very book, from which thoſe examples, that I produce to you here, are transfer'd into the Sepulchretum.

2. And yet other hiſtories were not wanting, which related to this ſection, whether they were to be taken from the Sepulchretum itſelf, or elſewhere. For example's ſake, our Saxonia (*b*) ſaw a ſmith in this city " who after a " long ſuppreſſion of ſtools, and great pains of the belly, partly by the uſe " of acrid glyſters, and partly by the uſe of other remedies, diſcharg'd ma- " ny ſmall ſtones of the bigneſs of a filbert, of a yellow colour, and ſo ex- " tremely hard, that they could ſcarcely be broken by violence." And this obſervation might have been very properly introduc'd in this ſection, and it would have been more particularly ſuitable in that place, where (*c*) coſtiveneſs is deduc'd from calculi of the gall-bladder; or if they ſhould ſeem to be too hard, and large, to be refer'd to that claſs; although the biliary canals are ſometimes found to be much dilated; yet in this ſection, at leaſt (*d*), a calculus, of the bigneſs of a cheſnut, which adher'd to the colon, is ſuppos'd to be the cauſe of a coſtiveneſs of the ſame kind, or as a great number of other obſervations which were already explain'd, pretty much at large, in other ſections, are repeated in this; why is that wonderful hiſtory (*e*) of the maniacal man omitted here, who, though he devour'd every thing he met with, nevertheleſs ſometimes diſcharg'd nothing from his belly, which was very tumid, for fifteen or ſixteen weeks together? or not to digreſs far from this ſubject, as among the examples here produc'd of infants, who being born without any aperture from the rectum, could of courſe diſcharge nothing by that way, the obſervation of Holtzach (*f*), taken from one of them,

(*b*) Prælect. pract. p. 2. c. 19.
(*c*) Obſ. 12. §. 2. 3. 7. 8.
(*d*) Obſ. 9. §. 4.
(*e*) L. 1. ſ. 9. in addit. obſ. 1.
(*f*) Obſ. 11. §. 6.

who

who diſcharg'd the excrement of the bowels, by the penis, is repeated from the next ſection *(g)*; why is another ſimilar one omitted, which had been there produc'd *(h)*, from Hildanus, or two of Mœbius *(i)*, the firſt of which is very much like thoſe, and the ſecond relates to a little girl of ſix months old, who diſcharg'd the abdominal fæces through the vagina?

3. Of this laſt kind is the obſervation of my fellow-citizen Mercurialis *(k)*, which is very much celebrated, if any other obſervation is, among the medical writers Daniel Sennertus *(l)*, Thomas Bartholin *(m)*, Johannes Rhodius *(n)*, and others. But it is ſurprizing that Rhodius who reſided thirty-ſeven years at Padua, collected his obſervations here, and publiſh'd them in the year 1657, did not enquire what had become of that ſame "daughter of a Jew, who went under the name of a German" whom Mercurialis ſaw "in this city," and who, being born without any natural paſſage from the rectum, "diſcharg'd her fæces by the vulva," and nevertheleſs, contrary to what might be expected by ſome, "ſurviv'd."

However as Rhodius was not ignorant, from a ſimilar, and equally celebrated obſervation of Benivenius *(o)*, that another girl had not liv'd beyond her ſixteenth year, he would readily ſuppoſe that this Hebrew girl alſo, had perhaps died the ſame kind of death, not many years after Mercurialis had ſeen her, (and he had ſeen her before the year 1583), that is, had died from an excruciating pain of the inteſtines, probably from the excrements being, at that time, much indurated, and become ſo thick, that they could not be diſcharg'd by a paſſage which was not natural to them, nor yet perhaps proper to convey emollient, and lubricating, clyſters commodiouſly to the inteſtines. But whether in the girl of Benivenius, this happen'd the more eaſily, becauſe ſhe had no diſcharge by ſtool, more than once in eight days; or whether the Paduan Jeweſs was more fortunate, Rhodius would certainly have found, had he enquir'd, that ſhe was alive even then, and had paſs'd her ſeventieth year, (and not only, as a certain girl whoſe hiſtory is given elſewhere *(p)*, of twenty years of age): and indeed ſhe even ſurviv'd Rhodius by many years, inaſmuch as ſhe, which is a very rare inſtance even among thoſe that are moſt healthy, liv'd a whole century, as was teſtified to me, by one who had ſometimes attended this old woman, as a phyſician, I mean Iſaac Cantarini, when in the year 1719, he happen'd, as he was a learned old man, to be talking with me of Mercurialis. But ſhe always bore up under her misfortune with patience, and without attempting to relieve it, well-remembering the advice that was given to her father, by Mercurialis.

And there is no doubt but where another paſſage is open'd by nature itſelf, through which you may make a ſufficient diſcharge of the excrementitious matter, the inconvenience is to be prefer'd to the many and various dangers, which, unleſs neceſſity itſelf compels, are by no means to be enter'd into, or at leaſt not from the advice, and countenance, of a prudent man.

(*g*) Obſ. 24. §. 1.
(*h*) §. 2.
(*i*) Obſ. 22.
(*k*) De morb. puer. l. 1. c. 9.
(*l*) Medic. pract. l. 4. p. 1. ſ. 1, c. 1. in fin.
(*m*) Cent. 2. hiſt. 63.
(*n*) Cent. 2. obſ. 91.
(*o*) De abdit. morbor. cauſ. &c. c. 86.
(*p*) Eph. n. c. dec. 2. a. 10. obſ. 75.

For unleſs the aperture of the rectum at the anus, be found to be ſhut up only by a membrane, ſo that by an eaſy and ſafe inciſion, an exit may be given to the excrements, that are urging from above, as the diſſection of a little boy, deſcrib'd by the celebrated Baverus (*q*), ſhows might eaſily have been done, an inciſion undertaken raſhly will frequently haſten the death of the infant, and will make that remedy infamous and horrible, which would otherwiſe be advantageous to many, if prudently made uſe of. For ſuppoſe that the rectum has, in the whole extent of it, no paſſage at all, but is ſolid like a rope, as the eleventh obſervation, in this part of the Sepulchretum, deſcribes it (*r*); or ſuppoſe, to omit examples of other diſorders, that the whole of that inteſtine is wanting, of which you will find an obſervation in the ſame place (*s*). Is not the ſucceſs of the inciſion, which you read there, the ſame with that which you read of in Schenck (*t*), when in the daughter of one Sichard an apothecary, the ſurgeon attempted the diſſection indeed, but "did not find the rectum?" As another ſurgeon did not, in like manner, who perforated "to the length almoſt of the little finger," in one of thoſe infants, I mean, whom Ruyſch found to be entirely without that inteſtine (*u*).

Nor indeed are inſtances of this kind very rare; for the celebrated Heiſter (*x*) has affirm'd it to have been ſeen more than once by him alſo, and has deſcrib'd one example fully (*y*): nor are we without another, beſides theſe, which you may read elſewhere, though taken notice of by the celebrated Hoyer (*z*) only *en paſſant:* and indeed that ſometimes happens, likewiſe, which may eaſily deceive the operator, that is to ſay, the lower part of the rectum is not wanting: for by introducing the finger per anum, for ſome little ſpace, which is ſufficiently pervious, he naturally conceives a hope of a ſucceſsful inciſion, as if nothing but a kind of membrane, which was interpos'd, cut off the communication with the upper part of the rectum, and yet this remaining part is in fact no-where; but the other rectum is an inteſtine, which being full of fæces, is inflected at a conſiderable diſtance from the anus, to the upper part of the os ſacrum, and being ſhut up, and firmly concreted to that part, terminates there, as has been ſeen by the celebrated Peter Chriſtopher Wagner (*a*).

It is true, I ſhould not always blame the ſurgeon, if an infant die on the day after the inciſion has been made, as that did whoſe two little brothers had, alſo, been born with an imperforated rectum (*b*). For although I have read, that a great number of other infants, who were affected with the ſame præternatural diſorder, have liv'd ſeven, ten, twelve, or more days; yet I have alſo read that ſome, in other reſpects healthy, and who had not undergone the leaſt inciſion, did not live more than three days.

However, unleſs it appear from diſſection, that the chirurgical operation has not been the cauſe of death, he, in particular, will not eſcape all ſuſpi-

(*q*) Act. eorund. t. 4. obſ. 147.
(*r*) §. 4.
(*s*) §. 17.
(*t*) Obſ. medic. l. 3. ubi de inteſtino recto obſ. 6.
(*u*) Adverſ. anat. dec. 2. c. 10.
(*x*) Inſt. chirurg. p. 2. ſ. 5. c. 163. n. 1.
(*y*) Eph. n. c. cent. 3. & 4. obſ. 193.
(*z*) Earund. cent. 6. obſ. 59.
(*a*) Commerc. Litter. a. 1735. Hebd. 46. n. 4.
(*b*) Eph. cit. dec. 3. a. 5. & 6. obſ. 282.

cion of having haſten'd the death of the infant, who, without properly conſidering every circumſtance, has run headlong to the inciſion, as if to a remedy that was not at all dangerous. Wherefore, when any other paſſage is ſufficiently open'd, although attended with great inconveniencies, and it is not certain that the rectum comes down ſo far betwixt the buttocks, that its canal is cover'd only with the cutis, or a membrane of no great thickneſs; we muſt not ſearch, in that part, for what perhaps terminates in another place, as for inſtance, in the upper part of the vagina. For unleſs the inciſion penetrate thus far, it can have no effect in removing the complaint; and if it does really penetrate thus far, two other dangers remain behind, beſides that of hæmorrhage, or convulſions, one of which is, leſt the paſſage open'd by nature, into the vagina, may never be quite clos'd up, notwithſtanding the inciſion; and the ſecond, leſt that which is open'd artificially by another way, ſhould from the want of a ſphincter, to ſhut up the orifice, not remove, but double, the inconvenience.

4. But if there be no exit at all, to the abdominal fæces, a doubtful method of cure ought to be prefer'd to the certain death of the infant. For nature has not dealt with other animals, as ſhe has with that inſect, which is call'd by the French *Fourmi-lion*, and which according to the obſervations made upon inſects, by that incomparable natural hiſtorian Reaumur (*c*), has neither any anus, nor any inteſtinal excrements that can be perceiv'd. And if the cow at Perinthus, of whom Ariſtotle (*d*) deliver'd down in writing, what he had heard, had no external aperture to the rectum, " in which " the excrementitious part of the food being attenuated, was diſcharg'd " through the bladder, and the anus being cut aſunder, very ſoon clos'd " up again, ſo that the diſorder could not be obviated by repeated inciſion;" I have no doubt but I may ſuſpect, with ſome probability, that the laſt inteſtine terminated in the bladder; and the uſeleſs inciſions confirm what I juſt now ſaid, of the difficulty either of penetrating ſo far as there is occaſion, or of ſhutting up a paſſage, which has been open'd by nature.

And I had the ſame ſuſpicion formerly, when I heard that there was a virgin at Bologna, who diſcharg'd nothing by the inteſtines, but all by the bladder, diſſolv'd in the urine. For that this inteſtine has, more than once, been inſerted into the bladder, three obſervations, which you have join'd together in the Sepulchretum, teſtify (*e*), or at leaſt two, if the third is the ſame as the firſt, which this twelfth ſection, being quoted in the former (*f*), ſeems to ſhow. But if none of thoſe infants, that are deſcrib'd in theſe obſervations ſurviv'd; the cauſe of their death is, perhaps, to be aſcrib'd, if not ſo much to the very narrow communication betwixt the rectum, and bladder, ſuch as is deſcrib'd, and delineated, by the celebrated Sandenius (*g*), yet at leaſt to the narrowneſs, length, and winding, of the male urethra, which is, for theſe reaſons, unequal to the taſk of diſcharging the urine for a long time together, as it is now very thick, on account of the excrements being mix'd with it (*h*).

(*c*) Memoir. pour. Phiſt des inſect. t. 6. mem. 10.
(*d*) De generat. animal. l. 4. c. 4. in fin.
(*e*) L. 3. ſ. x.. obſ. 24. §. 1. 2. 3..
(*f*) Vid. obſ. xi. §. 6.
(*g*) Eph. n. c. dec. 3. a. 9. & 10. obſ. 194.
(*h*) Vid. tamen epiſt. 65. n. 6.

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Be this as it will; as often as ever it appears, that no paſſage is open for the diſcharge of the fæces, from the inteſtines, we muſt not delay, till the long retention thereof, begins to be very injurious to the infant; and, for that reaſon, renders it leſs fit for the operation; but the cure muſt neceſſarily be attempted, having firſt declar'd to every one about the infant, the doubtfulneſs of the event; yet the attempt muſt be always made with caution, and with ſkill, leſt by one who is ignorant of anatomy, the bladder, or, in females, the vagina, be wounded, together with the other parts, eſpecially where the inſtrument muſt, neceſſarily, be introduc'd very high up.

For beſides a very thick membrane, a ſpongy fleſh, ſometimes, and fat, to the extent of two inches, may be interpos'd, as you will learn from the Sepulchretum (*i*), and even ſometimes, as you will read in the ſame place (*k*), the internal coalition goes up ſo high, as to equal the length of "two joints "of the little finger, of a moderately-ſiz'd man;" and yet the child, "having loſt but little blood," in the perforation, and a proper cure having ſucceeded, was preſerv'd, ſo that being at length "an old woman," ſhe died, as it ſeems, of quite a different diſeaſe, which you will learn from reading in another place (*l*), the concluſion of that obſervation, which is very improperly omitted there. And you will find that another liv'd till it was four years of age, and is perhaps ſtill living; I mean one whom Hoyerus (*m*), that I have commended above, cur'd by an inciſion, longer than the "joint of a man's thumb:" to take no notice of that, which the celebrated Huberus (*n*) ſhows it poſſible to have ſav'd, if the father of the infant had ſuffer'd the *carnec-pinguedinous* maſs which he ſaw in the dead body, and which had been already cut through with the knife, in the living body, "to the extent of almoſt two fingers breadths," to be cut a little higher; for by this means, the inciſion would have reach'd into the cavity of the inteſtine, that terminated cloſe to it.

5. But, although this kind of diſorder may ſometimes be cur'd, even when there ſeems ſcarcely any hope of a cure, many of them are, nevertheleſs, abſolutely incurable, as when there is an occluſion, or adſtriction, in ſome one of the higher inteſtines, of which caſe you have inſtances not only here in the Sepulchretum, but will alſo have other inſtances from me, at other times. And to theſe you will add, not only the large fleſhy excreſcence, ſaid, in the preceding letter (*o*), to have been found within the colon, by Corteſius, but alſo the ſcirrhous ring, made up of glands, which the celebrated Haaſius (*p*), found in the ſame place, and which left a foramen ſcarcely ſufficient to admit a ſlender probe; and, in like manner, the callus of the ſame inteſtine, which was almoſt cartilaginous, and which the celebrated Chriſtian Wencker (*q*) deſcrib'd, from the obſervation of his brother, as rendering the tube, in that part, extremely narrow; nor muſt that be omitted which is deſcrib'd by Laubius (*r*), of the colon, before it came near to the rectum, having its coats ſo contracted in a great part of thetube, as to render it not at all ſurpriz-

(*i*) Obſ. cit. xi. §. 14.
(*k*) Ibid. in ſchol. ad §. 4.
(*l*) Eph. n. c. dec. 1. a. 3. obſ. 257.
(*m*) Obſ. 59. cit. ſupra, ad. n. 3.
(*n*) Act. n. c. t. 8. ob. 24.
(*o*) N. 21.
(*p*) Commerc. litter. a. 1742. hebd. 45. n. 2.
(*q*) Diſſ. ſiſt. virgin. ventric. perforat. §. 5.
(*r*) Eph. n. c. cent. 7. obſ. 41.

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ing, that the fæces could not deſcend; and ſtill leſs muſt we omit the ſame diſorder, when it is, at the ſame time, extended to the greater part of the rectum, ſuch as was ſeen by Waltherus (*s*), who was, when living, a very experienc'd man. And not to quit the ſubject of this laſt inteſtine, external compreſſion is often the cauſe of an incurable coarctation therein.

Thus in the caſe given under the eleventh obſervation, of this ſection of the Sepulchretum (*t*), by whom could it be well-known, that a kind of glandular tumour compreſs'd the upper part of the rectum, on both ſides; and I may, with much greater propriety, perhaps, ſay, by whom could it be cur'd? And I do not doubt, but the coalition of this inteſtine is to be deduc'd, rather from a tumour of that kind, than from "ſome very hot "medicines (*u*)," which had been taken, and which would dry up, and contract, the inteſtine, juſt as fire is wont to dry up membranes; provided, however, that the coalition was really in the rectum, ſince a portion of a wax candle was introduc'd, as Donatus ſays, "to the length of a foot and a "half;" for how this could happen in any man, I do not ſee, unleſs the candle was drawn away in an inflected ſtate, or unleſs the inteſtines were differently diſpos'd, from their uſual, and natural ſituation. But let the coalition have been wherever you pleaſe to ſuppoſe, that it is to be accounted for, rather, from the cauſe which I have mention'd, than from any different cauſe, another hiſtory of the ſame coalition, which is transfer'd hither from Tulpius, will demonſtrate (*x*).

For this author ſaw this inteſtine, of which I am ſpeaking, ſo depreſs'd by two calculi of the urinary bladder, "that being ſtreighten'd, and collaps'd, it "produc'd many membranous filaments, which ſo cloſely interwove the in-"ternal parietes of its tube, as to prevent a poſſibility of its tranſmitting "any excrement;" and in the ſame manner, he had ſeen, at another time (*y*), "that ſimilar filaments had obſtructed the gula, which was ſtreighten'd "by a cancer." But this coalition of the rectum was incurable, alſo, for more reaſons than one, as you will learn from reading that obſervation, in the writings of Tulpius himſelf (*z*). Moreover, how much the inteſtinum rectum, when compreſs'd and made narrow, may obſtruct the diſcharge of the fæces, even without any connection of the parietes, you will learn from other obſervations, which you may join to thoſe of the Sepulchretum; as, for inſtance, from that of Riedlinus (*a*), who found, in a man, that had died of an obſtruction of the bowels, "a maſs partly fleſhy, and partly glandu-"lar," which was larger than a fiſt, and compreſs'd the inteſtine, near to the urinary bladder; and in the inteſtine, alſo, were many "fleſhy excreſcences:" or from thoſe of Jannellius, and Lanciſi (*b*), who ſaw an obſtinate, and inſuperable, coſtiveneſs in a matron, from the colon, and particularly, in its lower part, being ſo dilated, and heavy, as to force the uterus towards the rectum, to confine it to a very narrow compaſs, and cauſe a great contraction of its canal: or finally, from that of the celebrated Haſeneſt (*c*), who

(*s*) Diſſert. de inteſtinor. anguſtia §. 20.
(*t*) §. 2.
(*u*) Vid. ſchol. ſubject.
(*x*) Obſ. 14. §. 5.
(*y*) Vid. ejus. obſ. med. l. 3. c. 1. in fin.
(*z*) C. cit.
(*a*) Vid. act. erudit. Lipſ. m. jul. ubi ejus curæ med. referuntur.
(*b*) Eph. n. c. cent. 10. in append. n. 4.
(*c*) Commerc. litter. a. 1740. hebd. 30. n. 1.

obſerv'd.

obſerv'd many adipoſe appendages, hanging, externally, to the ſides of the rectum, which, in their ſhape, reſembled that of a ſmall pear, and which, though in conſequence of their ſoftneſs they did not, indeed, bring on an obſtruction of the bowels, " greatly prevented, nevertheleſs, a free diſcharge from that canal.

6. There is, beſides, another diſorder of the ſame inteſtine, of which I ſee that no mention is made in this ſection of the Sepulchretum. Ruyſch in his *Obſervationes Anatomico-chirurgicæ (d)*, and likewiſe in his Adverſaria (*e*); deſcribes it under the name of " a ſcirrhous thickening, and ſurprizing coarctation of the rectum," that is to ſay, with its coats almoſt exceeding the thickneſs of an inch, and ſo much indurated, that he was in doubt, whether to call them cartilaginous, or fleſhy; and with its cavity ſo much diminiſh'd, in circumference, that a ſlender probe could ſcarcely be introduc'd ſometimes, nor could the fæces be diſcharg'd, without the moſt violent ſtrainings, and that either in drops, or in a ſlender ſubſtance, ſcarcely thicker than a ſtalk of graſs. This diſorder he aſſerts " to happen rarely, and for that " reaſon, to be known to few:" nor indeed does it appear, that it had been ſeen by him, in more than two caſes; ſo that he put them in the number of thoſe, which he ſuppos'd never to have been ſeen by Bidloo *(f)*.

I remember that Valſalva was ſent for to Faenza, to a very conſiderable man, who, as the ſame ſymptoms demonſtrated, was troubled with the ſame diſeaſe, or, at leaſt, with one which was very near akin to it. I accompanied Valſalva to that place, and he told me, that the ſame kind of diſorder had been obſerv'd by him, before, in others, and by diſſection alſo, as I ſuppoſe; for I find no ſuch thing in his diſſections: but only in other papers, as far as relates to two patients, whom he ſaw ſome years after, as the caſes, which he has left in writing, together with the treatment of them, demonſtrate. In both of them, he refers the difficulty in diſcharging the fæces, from the inteſtines, to the glands being become much thicken'd in the rectum, and in part ulcerated; and in one of them he ſays that a tumour, in the form of a ring, was perceiv'd to be prominent on the inſide of the inteſtine, about three inches above the lower part of the rectum.

I myſelf was alſo conſulted, in the preceding ſummer, for a noble matron, who having, for many months, diſcharg'd the inteſtinal excrements, compreſs'd into the ſhape of a flat border, or fillet, and imagining that ſhe was troubled with no diſorder, but that of the piles, had been lately found to have the inteſtine, about the upper part of the ſphincter ani, ſwell'd all round, to the extent of two inches, and ſo much ſtreighten'd, that the point of the finger could not be introduc'd, without force, and uneaſineſs. As this patient had, before, been ſubject to tumours in the glands of the groins, and the axillæ, and likewiſe, to puſtules, and ulcerations, and as, even at this time, ſome pus was diſcharg'd before the fæces, though not in great quantity; I readily judg'd that the ſame thing, which Valſalva had perceiv'd in thoſe patients, by means of the finger, was to be perceiv'd, alſo, in this matron, and wrote back this opinion, in my anſwer to thoſe who conſulted.

(*d*) Obſ. 95. & 96. (*e*) Dec. 2. c. 10. (*f*) Reſponſ. ad Bidl.

me

me by letter, eſpecially as I was led to the ſame way of thinking, by ſome obſervations of my own.

One of theſe which I ſtill preſerve, together with the diſſection, I ſhall the more readily write to you, becauſe I ſee that this diſorder, or at leaſt one very ſimilar to it, is deſcrib'd, as far as it could be, by obſervations taken from the living body, in the Commercium Litterarium (*g*), and claſs'd, "with juſtice, among thoſe that are more rare;" but I find no anatomical inſpection of the patient, who died, ſome time afterwards (*h*), of an iliac paſſion. And although I read, in another book (*i*), that there was, in a little boy, "ſuch a diſeaſe of the rectum, as Ruyſch in the ninety-fifth, and ninety-"ſixth, of his *Obſervationes Anatomicæ*, deſcribes by a twofold example, that "is to ſay, a diſorder in which the ſphincter ani was concern'd, and by "means of which, it had grown rigid all round, and contracted a very great "ſcirrhoſity;" yet I obſerve that the ſame kind of diſorder was common to the other inteſtines alſo, and this in particular, "that the bowels in the "beginning were a little coſtive, but after ſome time very lax; and that the "aliments, which had been but juſt taken in, were, for the moſt part, diſ-"charg'd, without the patient's being ſenſible of it." And for this reaſon I ſubjoin my obſervation which is as follows.

7. A woman who was more than fifty years of age, had fallen three years before from a hæmorrhoidal affection, as ſhe herſelf ſaid, into a much more grievous diſorder of the rectum, on account of which ſhe was, at length, receiv'd into the hoſpital of incurables, at Bologna, about the end of the year 1704. Valſalva having only aſk'd queſtions of this woman, without ſo much as introducing his finger, to examine the rectum, immediately pronounc'd her diſorder to be incurable, and, turning to me as I ſtood cloſe to him, ſaid, this is a diſorder of a ſimilar kind with that which I found at Faenza, ſome months ago, when you were there with me (*k*), that is to ſay, a glandular tumour occupies the circumference of the rectum here alſo. And this woman, although with the other ſymptoms of this diſorder, ſhe perceiv'd no pain, diſcharg'd, nevertheleſs, a great quantity of fœtid matter, ſometimes thin, and at other times pretty thick. Wherefore, being brought to the laſt ſtage of a conſumption, ſhe died within a month, or two, from her coming into the hoſpital, after fevers which attack'd her with a chilneſs.

The inteſtinum rectum being laid open longitudinally, and diſplay'd, I examin'd it, and found it in the following ſtate. At ſix or ſeven fingers breadths above the anus it began to become pretty hard, and thick, and to ſwell out, every where, from the ſurface, internally, into bodies, which, in their figure, and ſize, reſembled very large beans. They were all ſmooth in their ſurfaces, but of a ſolid and compact ſubſtance. The hardneſs and thickneſs of the inteſtine, and the bulk of thoſe bodies, which were more nearly ſimilar to conglobate glands, than to any other bodies, and in their colour alſo, as well as in their ſize, and figure, were proportionably increas'd, as you came nearer to the lower part of the canal. Yet the lower part of the inteſtine, as far as it could be cover'd with the breadth of a finger, was found,

(*g*) A. 1742. hebd. 35. §. 3. n. 1.
(*h*) A. 1744. heb. 2. §. 3. n. 2.
(*i*) Act. n. c. tom. 2. obſ. 65.
(*k*) Vid. n. proximo ſuperiore.

and from the very extremity of the anus hung two excreſcences, at the ſame time that the cutis was ſlightly ulcerated about the anus.

8. Now in order to perceive that Valſalva's obſervations, and mine, differ leſs from thoſe of Ruyſch, than, perhaps, appears at firſt ſight, compare them together, and you will find that the firſt patient of Ruyſch, alſo, had excreted (*l*) the inteſtinal fæces, with "an ichorous, and purulent matter," and that the diſeaſe of the ſecond (*m*), was, by ſome phyſicians, thought "to be the piles:" both of which happen'd likewiſe in moſt of our patients. And indeed I believe that one principal reaſon, amongſt others, why this diſorder, though, perhaps, not very rare, has been known to very few; nor has been found out, for the moſt part, till very late in the diſeaſe, when the finger was at length introduc'd, is that the patients, and the phyſicians, generally ſuppoſe no diſeaſe to be concern'd in the caſe, but the piles. And for this reaſon, in that ſecond caſe of Ruyſch's it was reſolv'd, that they ſhould be taken away by inciſion, which was even attempted, but of courſe without effect. And, indeed, even if that kind of diſorder which I have deſcrib'd, were of ſuch a nature, that it could be remov'd by the chirurgical knife; yet the very ſeat of the diſeaſe, as it has been ſeen by Ruyſch, and by us, is often ſo very high up within the inteſtine as to leave no room to admit of ſuch a method of cure.

However, that ancient opinion, which is circulated together with the books of Hippocrates (*n*), does by no means eſcape me; I mean, that "the "inteſtinum rectum may be cut, and repeatedly cut, may be ſew'd up, may "be burnt with actual, or potential cauteries, and may be ſlough'd away "afterwards, and yet, notwithſtanding theſe things may ſeem ſo very vio-"lent, they will have no miſchievous conſequences." But, at the ſame time, neither does it eſcape me, that this dogma is, by the moſt ſkilful ſurgeons, generally refer'd to that part of the inteſtine, from the more deep inciſion of which moſt of the ancient ſurgeons abſtain'd, leſt they ſhould cut aſunder the ſphincter ani, and take away its power, and office, for ever. And if this fear had not been, in great meaſure, remov'd, by the obſervations of others, I could have aſſur'd you of my having heard Valſalva ſay that he, by making the experiment upon dogs, had found this ſphincter, when cut aſunder through the whole of its thickneſs, to have again recover'd its power, and perform'd its office, though not ſo ſtrongly as before, and that he had obſerv'd the ſame thing, in the human body, on ſome occaſions.

I have alſo read, in a certain paper of his, which was written after this time, that a man had been cur'd by him, in the year 1708, in whom an abſceſs, and a gangrene, that ſucceeded thereto, had eroded part of one buttock, together with that whole portion of the ſphincter, which correſponded to it, ſo that the fæces were diſcharg'd involuntarily: that this man, though in conſequence of theſe diſorders, he was brought to the very threſhold of death, had eſcap'd, and his ulcer being perfectly heal'd up, that the ſphincter had return'd to its former ſtate. But, notwithſtanding the truth of theſe things, the farther you go up, above the ſphincter, ſo much the more dangerous the inciſion will be, whether, ſome larger blood-veſſel being hurt thereby,

(*l*) Obſ. ibid. cit. 95. (*m*) Obſ. 96. (*n*) L. de Hæmorrhoid. n. 1.

you

you may not be able to ſtop the flux of the blood; or ſome nerve, being prick'd, give riſe to that mortal pain, which our Fabricius has obſerv'd (*o*), and which ſeems to have proceeded from this cauſe; or, finally, whether, neither the artery, nor nerve being wounded, you only perforate the inteſtine, and by this means open an exit for the fæces into the cavity of the belly: for who is able to avoid theſe dangers, in blind and dark inciſions?

9. For theſe, and for other reaſons, therefore, which are of themſelves ſufficiently manifeſt, when there is not room to attempt an efficacious cure, it remains that with Ruyſch (*p*), and Valſalva, we neceſſarily embrace that which is call'd *palliative*. The firſt commended emollients, and glyſters, that alleviate pain. Nor did the other diſapprove of them, unleſs they flow'd back immediately: for which reaſon, he rather recommended the injections of ſmall quantities, and frequently, and even to bury in the rectum, as far as the patient could bear it, without uneaſineſs, the tube through which theſe clyſters were convey'd, and which ſhould be properly perforated, laterally, ſo as to ſuffer the fluid, that it convey'd, to come to the very ſeat of the diſorder: he alſo, on the ſame plan, advis'd to uſe a bath of an emollient, and lenient nature, and to keep a pipe of this kind in the rectum, while the patient ſat over the bath, ſo as to admit the fluid into immediate contact with the diſeas'd parts.

However, the fluid that he recommended, to be us'd for this purpoſe, was different according to the different ſtate of the diſeaſe; ſometimes he us'd lime water more or leſs diluted; ſometimes the water of that warm bath, which is above Bologna, and which he ſometimes alſo gave for drink; and, at other times, when he ſuppos'd there to be no ulceration join'd to the other diſorders, he medicated common water, by boiling in it ſuch ingredients, as he thought would be of moſt ſervice.

So he alſo preſcrib'd various remedies to be taken internally, and among thoſe the turpentine-reſin, after which was to be drunk a water, medicated with vulnerary herbs, (with which he ſometimes mix'd this reſin diſſolv'd in the yolk of an egg, and us'd it for injections); but, ſometimes, when the ſeaſon of the year was very warm, he omitted the reſin, and made uſe of water, in which the ſame, or other herbs, had been occaſionally boiled, but in ſmall quantity only, in proportion to the water; ſo that a very free uſe might be made of it, almoſt like the warm bath waters; and he would even have it drunk by way of common liquor: but in the winter he recommended wine at the table, and that of the domeſtic kind, in which, at the autumnal ſeaſon, when it fermented in the caſk, ſuch roots, woods, and leaves, as he thought to be moſt ſuitable, had been macerated.

Hitherto I have follow'd the advice and example of both theſe gentlemen, in ſuch a manner as to recommend ſome of theſe remedies, in preference to others, and, in general, to mix with them ſuch medicines, as are effectual againſt the venereal diſeaſe, inaſmuch as I have obſerv'd that a diſorder, of the venereal kind, has been generally accuſtom'd to precede the diſorder of which I treat; and ſtill leſs did I omit ſuch things as I have known to be, ſometimes, of great ſervice, in diſſolving hard tumours. For I believe that

(*o*) De chirurg. oper. c. de an fiſtul. in fin. (*p*) Obſ. cit. 96. in fin.

theſe

theſe ought to be us'd more frequently than thoſe which are properly emollient, leſt it ſhould happen, that the fibres being too much relax'd, the parts yield to the matter that falls upon them, and the tumour being, by this means, increas'd, all paſſage for the excrements is intercepted: and, in like manner, we are to endeavour that theſe may be ſoft, leſt, being hard, and large in their dimenſions, they ſerve as an obſtruction to their own exit, through a paſſage, which is already too narrow, or leſt, if they do paſs through, they ſhould cauſe, by their violent compreſſion upon the tumour, pains, and ulcers, or if there are any already, increaſe them; yet we muſt not, for theſe very reaſons, uſe ſuch medicines, in order to bring this about, as are either in themſelves acrid, or may ſolicit a quantity of acrid humours towards that part.

10. There are two diſorders, which are the conſequences of that coſtiveneſs, upon which I have written to you this ſhort letter, the one more frequently, which is the diſorder of the hæmorrhoidal veſſels, commonly call'd piles, and the other not very rarely, I mean the prolapſus ani. In regard to the latter, as you knew there was no ſection in the Sepulchretum, on that ſubject, it is for this reaſon, I ſuppoſe, that you have, ſo long ſince, earneſtly entreated me to communicate to you, a long opinion which you had heard was written by me, and this, ſuch as it is, I will ſend you in the next letter upon the hæmorrhoidal affection, however, there is a ſection in the Sepulchretum (*q*); but ſo ſhort is it that, if you take away the ſcholia, it ſcarcely fills up half a page. For which reaſon I chooſe to add ſome things here, upon the ſubject of the piles, rather than, when I come to that ſection, write a whole letter upon it, eſpecially as among the obſervations of Valſalva, or among mine, we ſcarcely find any diſſections, which properly relate to theſe diſeaſes. Therefore, as to coſtiveneſs of the bowels, frequently bringing on the piles, as I ſaid juſt now, it is not to be doubted, and it is thus explain'd by Boerhaave (*r*), that in the ſtraining neceſſary to diſcharge the fæces, "the inteſtines are compreſs'd, the arterial blood is circulated more "briſkly, the venous is retarded, and even ſtagnating in the veſſels of the "inteſtinum rectum, putrifies, and by this means brings on a diſpoſition to "the piles."

I am not ignorant, however, that the blood ſtagnates in the veins of the ſame inteſtine, from other cauſes alſo. For as the moſt internal of theſe veins, finally terminate in the trunk of the vena portarum; if it ſhould happen that theſe veins, either in their paſſage, or in their termination, or even in this part, ſhould be, for a conſiderable time, ſtreightened, or preſs'd, by the convulſion, diſtention, or obſtruction, of the ſurrounding parts; it is natural to ſuppoſe that the blood would, certainly, be too long detain'd in theſe veins: ſo if the meſentery be convuls'd, or if the inteſtines are too much diſtended with flatus, or if the liver be obſtructed, the ſame thing may eaſily happen. And of this kind is the obſervation of Veſalius, which is the firſt, and at the ſame time the principal, of thoſe three that you read in the very ſhort ſection, which I juſt now pointed out.

(*q*) L. hujus 3. ſect. 15. (*r*) Prælect. in inſt. §. 774. in fin.

For in him who had labour'd, at intervals, under a flux of blood, from the hæmorrhoidal veſſels, the ſpleen was not the only viſcus indurated, as you will perhaps ſuppoſe, from turning to the fifth chapter of the third book, *De Fabrica Corporis Humani*, from which, alone, that obſervation is copied in the Sepulchretum; but "the liver was ſurprizingly hard" alſo, as you will learn from the fifteenth chapter of the fifth book, where Veſalius gives the ſame caſe a little more at large, and, at the ſame time, you will underſtand, or at leaſt in part, the real cauſe why the internal hæmorrhoidal vein "was equal nearly to the thickneſs of a man's thumb, at the extremity "of the colon, and through the whole length of the rectum;" which in his time he could not underſtand.

Without doubt, it was not very eaſy for the blood to paſs through a liver of that kind. But why then, you will ſay, did it not ſtagnate, equally, in the other veins, which go to the trunk of the vena portarum? And for this very reaſon it was, that I ſaid you would immediately underſtand it, or at leaſt in part. Add therefore, to omit other things, the very great length, which is peculiar to this one vein among the others, ſo that it is much more difficult for the blood to be carry'd upwards, from this vein, than from the others, eſpecially as the ſituation of the human body requires it, which, without doubt, is one of the reaſons, why other animals are not ſubject to the piles. And if you aſk why, in thoſe bodies, in which there is any impediment to the quick motion of the blood upwards, the veins of the legs in particular are dilated into varices, you will find the ſame thing to be the cauſe, of them chiefly, which we aſſign for the piles.

You ſee, even in the Sepulchretum (*s*), that Walæus expreſsly aſſerts the piles "to be nothing elſe but varices of the veins of the anus." And you will find Boerhaave confirming this opinion, in another place (*t*), where he has declar'd the ſame things which I copied from him juſt now, but more at large, and without the leaſt mention of putrefaction. And how much theſe veins may be dilated, I obſerv'd in a certain man (*u*) of a good habit of body, but inclin'd to be plethoric, who died at Bologna, in the year 1706, of a wound under the axilla, and whoſe body I diſſected. The extremity of the inteſtine, in this man, appear'd to have been ſubject to the piles, as it was internally unequal with varicous knots of veins; and as I look'd upon the largeſt of theſe veins very attentively, I wonder'd that none but the ſmalleſt blood-veſſels communicated with it, though itſelf was diſtended with a large quantity of grumous blood; ſo as to make it evident, that ſome very ſmall vein had been expanded, into ſo conſiderable a ſize.

11. That theſe things therefore, may not happen, which it is well known do by no means happen, without ſevere pains; and eſpecially at the time of going to ſtool, if theſe varices are really turgid, and not yet ruptur'd: or if they are ruptur'd, not without a hæmorrhage ſucceeding, which is ſometimes immoderate, and leaves ſuch conſequences behind it ſometimes, as have more than ſufficiently ſhown us, that the piles are not greatly to be deſir'd; in the firſt place a plenitude is to be avoided; for in men there are not paſſages pre-

(*s*) In ſchol. ad 1. obſ. ſect. cit.
(*t*) Prælect. cit. ad §. 112.
(*u*) De hoc vid. epiſt. 44. n. 22.

par'd

par'd by nature, for the ſuperfluous blood to be conveniently thrown off, as there are in women, in whom it was neceſſary; but they muſt be open'd by diſeaſe, which is then ſometimes ſalutary, but often dangerous, and always inconvenient.

In the ſecond place ſuch things ought to be avoided, as render the belly very coſtive; and I do not only mean to avoid taking in a great quantity of ſtyptic, and aſtringent juices, which by criſping up the minute orifices of the glands, that moiſten the inteſtines, and their contents, do not ſuffer a ſufficient quantity of moiſture to be diſcharg'd; but I ſpeak even of the cuſtom of eating, and eſpecially of drinking, much more ſparingly, than nature can bear. Thus we read in the life of Sarpi, that as he, when a young man, ate very ſparingly, and drank nothing, even for many days, he fell into an obſtinate coſtiveneſs, in conſequence of which, he not only went to ſtool no more than once in three days generally, but ſometimes only once in ſeven, and, in order to do that, was oblig'd to uſe ſuch violent ſtrainings, that brought upon him great pains from the piles, and a troubleſome prolapſus ani, under which he labour'd for many years.

But if, notwithſtanding thoſe things, that I have caution'd you againſt, being avoided, and others of the ſame kind, the inteſtinal fæces ſtill continue to be very hard, and the more frequent uſe of emollient food, is not of advantage againſt this coſtiveneſs; there is, perhaps, no remedy to be prefer'd, for preventing the piles being the conſequence of theſe ſtrainings, to that which I ſee is us'd by phyſicians of note, in order to prevent their being ſo painful, at the time of going to ſtool, when they are already form'd in the inteſtine. They inject, before the time of going to ſtool, an ounce of any emollient oil, and, in particular, linſeed oil: which I have alſo been accuſtom'd to uſe frequently, and ſucceſsfully, (when the hard excrements are to be ſoften'd, and the lower part of the inteſtine to be lubricated) nearly in the ſame quantity, or at leaſt not in a much greater, leſt it immediately flow back, and even that it may be for a long time retain'd: although I have ſometimes preſcrib'd olive oil in this manner, from the very time in which Ramazzini inform'd me, that in the caſe of a woman in child-bed, who, for ſeven days together, had never gone to ſtool, after a great number of different things had been tried in vain, it came into his mind, which he ſaid, if I remember rightly, he had read in Martinus Rulandus, that two ounces of common oil ſhould be injected every hour, and that by this means he had procur'd a diſcharge.

12. The mention of this remedy brings to my mind another, which I have heard was applied by an illuſtrious woman, who had been troubled, for a long time, with a tumefaction of the hæmorrhoidal veſſels. As ſhe came hither for the ſake of conſulting me, after I had examin'd them, I aſk'd her, by what means ſhe was able to put them up again as they were ſo ſwelled, without almoſt intolerable pain; ſhe immediately anſwer'd, that ſhe, after having made trial of a great number of things, had found nothing more uſeful, than the fat that lies about the kidnies of a dog, which has yellow, or rediſh hair. That with this fat, properly prepar'd for the purpoſe, ſhe anointed the piles when they were puſh'd down, at the time of going to ſtool; and, by this means, had been us'd to puſh them up, for a long time, with-

out pain, or at leaſt with much leſs pain than ſhe otherwiſe could, from the very time that others, having made the experiment, communicated it to her as a ſecret.

Indeed I had before known that phyſicians, ſometimes, made uſe of the fat of a dog, and not only the external, but the internal fat, yet the uſe of it for this particular purpoſe, and of that which is taken from a particular part of a particular dog, I do not remember ever to have heard of, or ſeen. It is much more eaſy to aſſign a cauſe for the utility of the two methods that I ſhall relate to you; for they are much more in common uſe, although not made uſe of, or at leaſt in general, againſt the ſame diſeaſe, nor in the ſame manner. That is to ſay, I ſaw Albertini alleviate the violent pain of the tumid hæmorrhoids, in a certain nobleman, by applying to them the internal parts of gourds, or by injecting water in which theſe had been boil'd: and from another nobleman of the firſt rank, and character, who had lately held the office of vice-roy, when he came to me, to aſk medical advice for his children, I heard, on occaſion of the piles being mention'd, that flannels ſteep'd in warm water, in which linſeed, and the ſlic'd roots of marſh-mallows, had, for a conſiderable time, been boil'd, being now and then applied to the parts, he had ſo far found advantage by them in this diſorder, that they not only alleviated the pains, but if they were applied, immediately upon the beginning of them, did not ſuffer the hæmorrhoidal tumour to increaſe, and, conſequently, did not ſuffer the piles to burſt, and cauſe a conſiderable loſs of blood.

But where this hæmorrhage was in too great a quantity, Valſalva, to return to the phyſicians, commended three things, in preference to others, from which it had happen'd that he had ſeen ſurprizing effects: the firſt, to anoint the umbilical region with freſh theriaca, in which opium has been mix'd in the proportion of four, or even of ſix grains, if the flux is conſiderable, to about ſix drams. The ſecond was to apply vitriol reduc'd into a calx, which is call'd by chymiſts colcothar, to the part from whence the blood flows. The third, to take care that the patient ſhould preſs the lower part of the inteſtine downwards, if perchance, as ſometimes happens, the open foramen of the ſanguiferous veſſel may be brought into view: and then to apply a little piece of vitriol, fitted in the orifice of a pipe, as painters are wont to apply the hæmatites, to this foramen, and to continue it there for a little time, till it bring on a cruſt. And in this order, in which he propos'd them, he would have them be applied, one after another, that is to ſay, where the former had not anſwer'd their end.

13. And becauſe the queſtion is not here of new remedies, or of unuſual methods of cure, but of thoſe which, from the teſtimony of illuſtrious patients themſelves, or that of grave phyſicians, have been found uſeful, and, in particular, of the method us'd by our Valſalva; I will alſo add this, as you deſire to know it. If he happen'd to light on a patient, who was not very deſirous to undergo any chirurgical operation, in order to prevent his being ſubject to an immoderate flux of blood, from the hæmorrhoidal veins, in the future, it was not his cuſtom to follow, unleſs perhaps in a recent diſorder, and indeed by another method of cure, I ſay, it was not his cuſ-

tom to follow the author of that little book entitled (x), *de hæmorrhoidibus*, which teaches us, " that we ought to leave no hæmorrhoid, or pile, un- " burnt, but to deſtroy them all by burning;" he rather follow'd the author of the ſixth ſection of the aphoriſms, who admoniſhes (y) " that if, in a per- " ſon who is cur'd of piles, that have been of long ſtanding, one of them is " not preſerv'd, there is danger that an anaſarcous dropſy, or a conſump- " tion, may come on." For this he took great care of, even in curing ulcers of the anus. Thus, once when he ſhow'd me a certain perſon who had labour'd, for ſixteen years together, under theſe ulcers, and who was, even then, extremely well, though it was in the eighth year after his cure; one ulcer, ſaid he, which was leſs troubleſome than the reſt, I purpoſely left untouch'd.

And I remember, when it was a matter of controverſy whether the diſorders, with which two knights, of diſtinguiſh'd rank, were troubled, were piles, or ulcers, that he immediately ſhow'd them to be ulcers, in both of them. For in one of them, having introduc'd his finger, pretty high up in the rectum, he pointed out to the others, the certain ſituation of the ulcer, as the apex of his finger being receiv'd into the orifice of it, ſeem'd to be embrac'd around, with a kind of ring as it were; for in this manner he aſſur'd them, that the ulcers of the rectum, or vagina, were frequently found, ſo that a narrow mouth is dilated into a more capacious ſinus. And in the ſecond, without introducing his finger, he not only ſhow'd that there was an ulcer, but alſo that it was not very high up; for there were ſome, among the others, who ſuppos'd that what was excreted, was a mucus preſs'd out from the glands of the rectum, which are pretty high up in the inteſtine. But theſe he eaſily convinc'd, even by the teſtimony of the patient himſelf; for as he confeſs'd that this matter flow'd from him continually, it follow'd of courſe that the original ſprings of it could not be above the ſphincter. And as this matter, even in the opinion of Valſalva himſelf, whoſe judgment, in an affair of that kind, was known to be peculiarly excellent, was without any heſitation pronounc'd, and even demonſtrated, to be purulent, there now remain'd no doubt at all, but it was to be accounted for from an ulcer. And they ſo much the more eſteem'd his judgment, in this caſe, as it was well known to every one, that he was extremely clear, in regard to thoſe things which are alſo taken notice of, in the ſcholia to that firſt obſervation (z) of the fifteenth ſection, of certain mucous, and whitiſh ſordes, ſometimes proceeding from the anus, which, although they have impos'd upon ſome, and been taken for pus, yet are known, by the moſt learned phyſicians, to be excreted from the hæmorrhoidal veins, juſt as a fluor albus (which was the compariſon of Platerus, who is quoted in the ſame ſcholia) is often ſecreted from the veſſels of the uterus, without any ſuſpicion of an ulcer. And this will be eaſily explain'd by you, in the ſame manner that you ſee, an uterine fluor, of this kind, explain'd by me, in the fourth of the Adverſaria (a), that is to ſay, if you conceive that the apertures of the veſſels, which, when in a more dilated ſtate, pour'd out red blood, being now more con-

(x) N. 1.
(y) Aphor. 12.
(z) Supra, ad n. 10.
(a) Animad. 27.

ſtring'd,

ſtring'd, though not altogether, do not ſuffer the red part of the blood to eſcape any longer, but only the ſerum of it, which is, of itſelf, viſcid in ſome perſons, or becomes mucous by ſtagnation, and that this diſtills gradually, or paſſes downwards, when preſs'd out by the excrements. And thus far I had to add on the ſubject of the piles.

LETTER the THIRTY-THIRD

Treats of the Prolapſus of the Inteſtinum Rectum.

THERE is not only no ſection in the Sepulchretum Anatomicum, upon the prolapſus of the inteſtinum rectum; but even no anatomical obſervations are extant any where, as far as I remember at preſent, which relate thereto. And ſince upon theſe, as upon a firm baſis, all the ſolid reaſonings of phyſicians, about the internal origins of diſeaſes, or their continued cauſes, are generally founded; it is for this reaſon not to be wonder'd at that no treatiſe has ever yet been publiſh'd upon this diſeaſe (for no ſuch treatiſe has fallen into my hands at leaſt, though treatiſes have been publiſh'd upon more rare, and much ſlighter diſorders) which might ſerve as a guide to any one, whoſe buſineſs it was to write upon this ſubject, and leſſen his labour; for this ſubject ought not to be handled in a haſty, and confus'd manner.

I never found myſelf more in want of a treatiſe of this kind, than when I was aſk'd to give the opinion which I have promis'd, in conſequence of your long-continued entreaties, to ſend you a copy of in this letter. And I ſend it to you juſt as I then wrote it, its tranſlation from the Italian language excepted. And I know very well, that the diſcourſes upon diſeaſes, which are requir'd by way of opinion, either almoſt immediately, or, within a very few days, by the friends of the patients, can have, when drawn up by me, no merit but that of diſpatch. For which reaſon I give copies of them to none, but to thoſe for whom they are intended: and from theſe perſons, muſt have come thoſe copies of opinions of mine, which you tell me you have read in great number; unleſs ſome have been falſly and ſurreptitiouſly taken, by thoſe whom I employ'd as copiſts, as I ſee has ſometimes happen'd.

But, although this which you will have at preſent, is not very much approv'd of by me, and though I had rather have ſent any other; yet if it will not ſerve to ſhew, how to diſtinguiſh thoſe opinions which are really mine, it will, at leaſt, ſhow you the greater part of thoſe things, which I would wiſh to have enquir'd into, by anatomiſts, in relation to this diſeaſe. For this purpoſe then, it was written, and in the following manner.

2. I wiſh

2. I wiſh the internal cauſes, by which the diſorder of this noble, and very learned, man was firſt brought on, and by which it is ſtill preſerv'd, were as evident as the diſeaſe itſelf, and the cauſe which increas'd it; and, what is of ſtill greater importance, I wiſh that the moſt effectual methods of remedying this diſeaſe, were as well aſcertain'd as the diſeaſe itſelf.

The diſeaſe of which I ſpeak is a prolapſus of the inteſtinum rectum: and the cauſe by which it was increas'd, was a violent and long-continu'd ſtraining at the times of going to ſtool. But in what manner it was increas'd, by theſe ſtrainings, from whence it had its beginning, and what its beginning was, and by what cauſes it is ſtill preſerv'd, or, as the language of phyſicians is, continu'd; all theſe circumſtances, eſpecially at ſo great a diſtance of times, and of places, it is very difficult for me to ſubjoin, and to know almoſt impoſſible. But if there were any one who had been able to obſerve the ſymptoms, and criſes, of that obſtinate, and troubleſome fever, to which the beginning of this diſorder ſucceeded; and to conſider, accurately, at that time, and when it was afterwards increas'd, and at this time alſo, of what nature the upper, and lower, extremities of the tube, which came forth, were, and what was its *conſiſtence*; it would perhaps have been leſs difficult for him to conjecture the true cauſes of the diſorder.

3. Theſe cauſes, if they are even only conſider'd jointly, may be many, and very different from each other. That very learned fellow-citizen of mine, Hieronimus Mercurialis (*a*), and Ambroſe Parey (*b*), aſſign one cauſe in particular, I mean the relaxation of the ſphincter ani, which ſuffer'd the inteſtine to come forth. But medical experience does not eaſily ſuffer me to aſſent thereto, as thereby I am taught, that a prolapſus of the inteſtine does not, immediately, ſucceed to a true paralyſis of that ſphincter, but only after ſome time has been interpos'd: and in our patient, in particular, I underſtand, how ſtrong this muſcle ſtill is, ſo that it reſiſts every other even violent motion. But Joannes Riolanus (*c*); I mean the father; adds to the relaxation of the ſphincter, that of the relaxation of the levatores ani alſo: and this the greater part of phyſicians admit. However, that this was the caſe in the preſent inſtance, and had been ſo from the beginning, I would neither boldly deny, nor for a certainty affirm. I only ſay this, that if it was ſo, it certainly was not the only cauſe, after the diſeaſe had continu'd ſome little time. For I know from anatomy, that the part of the inteſtine, which can remain without the anus, from this cauſe alone, that it is not rais'd by theſe muſcles, is the lower part, and only of the extent of a few inches; and that the part which lies above this cannot hang out for that reaſon, to the extent of eight or ten inches in length, and even to ſixteen or twenty, if it be conſider'd, that, by being inverted outwards, it muſt be in a double ſtate.

4. It becomes neceſſary therefore, to look out for other cauſes, and in particular that, amongſt others, which was hinted at, by the learned phyſician who conſulted me; I mean the ſeparation of the inteſtine from the meſocolon, or ſome other cauſe, which amounts to the ſame thing, and which happens more eaſily; as for inſtance, a relaxation, gradually brought on, of

(*a*) De morb. puer. l. 1. c. 10.
(*b*) Oper. chirurg. l. 7. c. 18.
(*c*) Meth. med. ſect. 3. ubi de Ileoſi.

the

the latter part of that meſocolon, which ſerves as a ligament to the rectum, and to that neareſt, winding, and moveable, tract of the colon, into which the rectum terminates.

It does not eſcape me, that, to ſome very modern profeſſors of medicine, it does not ſeem probable, that the whole body of the inteſtine ſhould come forth, conſidering the firmneſs of its ligaments, and its cloſe attachment to the vagina uteri in women, and to the neck of the bladder, and the neighbouring parts, in men, and conſidering an obſervation, beſides, which they quote from Cowper (*d*), of a man, who, after a long continu'd prolapſus ani, and, at length, a ſphacelus of the prolaps'd inteſtine, from too great intemperance, although he had undergone an extirpation of the corrupt parts, which hung down, not only recover'd his former health, but even liv'd quite free from the prolapſus. They, therefore, and the celebrated Junckerus (*e*), believe that the whole body of the inteſtine is not relax'd, but only the internal part, and that this, being thicken'd, is inverted, and puſh'd out: and I would not deny, but that which is ſuppos'd to happen in the prolapſus of the uterus, or, rather, in the more frequent prolapſus of the vagina, that many improperly confound with the prolapſus of the uterus itſelf, which is indeed very rare, is favourable to their opinion.

But, although I am not unappriz'd, how much membranes, that are drench'd, as it were, with moiſture, may be relax'd, thicken'd, and made long, yet when I read over what our Fabricius ab Aquapendente (*f*) aſſerts his having ſeen in ſome perſons, that is to ſay, "a *procidentia ani* ſo long, as "to be equal to the length of the fore-arm, and ſo thick, as to be equal to both the arms join'd together" (which paſſage, perhaps, had eſcap'd Junckerus (*g*), when he judg'd that a prolapſus, mention'd by Muralt (*h*), of an equal length, "almoſt exceeded all belief"); when I read, therefore, ſuch things, I ſeem inclin'd to believe, in ſome certain caſes, with the celebrated Polycarp Schacher (*i*), that the thing happens neither in that firſt, nor in the ſecond manner, but rather in the third which is propos'd by him.

That is to ſay, the lower part of the inteſtinum rectum, which I have ſaid to be firmly connected with the neighbouring parts, being unmov'd, the other part, which is ſuperior to this, falls within it, together with the fæces, and being inverted, comes forth on the outſide of the anus. For it is ſufficient that the meſocolon is there relax'd, where it confines the rectum; or if the prolapſus is very long, that it is relax'd in that place beſides, where it belongs to the neighbouring moveable, and winding tract of the colon, which being, in ſome perſons longer, and in others ſhorter, as I have ſaid in the third of the Adverſaria (*k*), ſo it may be more or leſs extended, and deſcend, and ſuffer the rectum to be prolaps'd. But if this additamentum of mine were not ſufficient, I ſhould then, moreover, think of another, as if beſides thoſe three methods mention'd above, a fourth might be propos'd, according to which, what I juſt now ſpoke of, in the third, might happen, and the internal coat beſides, as was ſaid in the ſecond, being re-

(*d*) Anat. of hum. bod. fol. t. 39. f. 7.
(*e*) Conſp. med. tab. 110.
(*f*) De chir. oper. c. de ani procid.
(*g*) Tab. cit.
(*h*) Eph. n. c. dec. 2. a. 1. obſ. 113. in ſchol.
(*i*) Diſp. de morb. a ſitu inteſt. p. n. c. 2. §. 3.
(*k*) Animad. 6.

lax'd

lax'd, inverted, and falling down, might come forth through the lower extremity of the prolaps'd inteſtine, and increaſe the length thereof, by being added to it.

5. It is not my cuſtom, indeed, to uſe very long harangues in the theoretical part of medical opinions, for I am not ignorant that moſt patients are like the empirics, who do not doubt, as Celſus ſays (*l*), "that theſe conjectures, upon occult cauſes, are very little to the purpoſe, becauſe it is of "no importance what has produc'd the diſeaſe, but what will remove it." Yet in this caſe I thought proper to proceed differently, not only becauſe the patient, who requires this opinion of me, is very learned, but alſo becauſe, notwithſtanding ſome animadverſions, which I may deduce from thoſe things that I have hitherto ſaid, would not perhaps ſhow the utility of what I have advanc'd, contrary to the opinion of the empirics (without doubt as the prolapſus of which I ſpeak, may be join'd with one, or with another, or with many of the cauſes that I have hinted at, and as it is not in my power, for the reaſons I gave in the beginning (*m*), without the greateſt difficulty, and conſequently without very great danger of erring, to determine with which it really is join'd) it is neceſſary, at leaſt, to gather by a kind of induction, which is what I am at preſent doing, that it is always probable, whether there be, in this caſe, one, or another, or many, of theſe cauſes join'd together, that it conſiſts in a kind of relaxation, and this a relaxation which began twenty years ago and more, as the effects of it ſhow, and was afterwards gradually increas'd.

6. And as from this induction an indication ariſes, of reſtoring to the relax'd parts that firſt and proper meaſure of rigidity, or cloſeneſs of connection, their former ſituation, and firmneſs; ſo no perſon, whatever, who is even ſlightly vers'd in medical affairs, can fail immediately to perceive, that it is very difficult, not to ſay impoſſible, to bring this about. And if, as Galen has in general taught (*n*), diſorders of the anus, or fundament, "are "very difficult to be cur'd," which was, perhaps, the reaſon why ſome phyſicians, formerly, plac'd all their ſtudy on the cure of theſe alone (*o*), with how much more difficulty muſt this diſorder, which is ſo ſtubborn, and of ſo long ſtanding, admit of a cure? Indeed I do remember to have read of other, more conſiderable, prolapſuſes being cur'd, as that was which I have ſpoken of from Muralt (*p*). But I do not remember to have read of an inveterate prolapſus, or one which had afflicted the patient for twenty years, being got rid of. For which reaſon we ought to be ſatisfy'd in the preſent caſe, if as the relaxation cannot be remov'd, we can, by means of the palliative method of cure, as it is call'd, prevent the daily effects of it, or render them leſs conſiderable, and more tolerable: for theſe effects are not only of importance, by reaſon of the uneaſineſs they give, but becauſe they increaſe the diſeaſe, and alſo becauſe there may be the higheſt danger, at one time, or other, either from the prolaps'd part being very much increas'd, or not being early replac'd, or injur'd from being expos'd to the air, or finally, from its being

(*l*) De medic. in præf.
(*m*) N. 2.
(*n*) De comp. medic. ſec. loc. l. 9. c. 6.
(*o*) Vid. l. Galen. adſcr. de partib. art. med. c. 2.
(*p*) N. 4.

but little confin'd by the ſphincter, which in a courſe of time may be relax'd, and particularly, at that time, when the ſtrength of the conſtitution, being broken down by age, will be leſs able to reſiſt this relaxation, or prevent that which is already preſent, from being farther increas'd.

7. But as I find that the moſt powerful medicines, whatever, have been in vain apply'd, to remove this relaxation; ſo I likewiſe ſee, that in the palliative method of cure, many and various inſtruments have been made uſe of in vain, againſt the effects of it; and that, for this reaſon, others are requir'd of me, and, in particular, a deſcription of that which is ſaid to have been invented formerly, by that very ingenious monk Paul Sarpi. But I fear leſt all theſe which are known to me, may at length be refer'd to thoſe, which have been already made uſe of; if we conſider that which is the principal; and amongſt theſe that of Sarpi alſo, ſince I find no deſcription of it but this, which we read in Rhodius (*q*): " the piles being return'd back in- " to their places, ſo as not to fall down again, let them be kept there with " an iron ring aptly applied: which many have receiv'd great advantage " from, and aſcribe its invention to Paul Servita, a Venetian, and a man of " great ingenuity. This ring is enclos'd, on each ſide, with ſoft leather, " which is faſten'd towards the perineum, and the buttocks, by bandages " that are ſew'd to each of its four heads, being connected with a linen girdle, " that goes round the waiſt."

The inſtrument of Sarpi, therefore, is of the ſame kind with the rings that have been already made uſe of: and that which, not to mention the *tabulæ anguſtiſſimæ* " of Hippocrates (*r*)," is recommended by Riolanus (*s*), and by two others among the French, Blegny (*t*), and Dionis (*u*), and before the latter, even by Muralt (*x*), that is to ſay, a tablet pierc'd through with a foramen of ſuch a kind, as not to ſuffer the inteſtine of the patient to paſs through, when he goes to ſtool, is upon the very ſame plan: and this tablet Muralt order'd to be enclos'd in a blue cloth, dyed with indigo, not what comes from Madagaſcar, but from the Caribbé Iſlands. And what Parey recommends, amounts, at length, to the ſame thing, though without the application of any inſtrument, when he ſays (*y*), " if the patient could diſ- " charge the fæces, in an upright and ſtanding poſture, the inteſtine would " never be in danger of being thruſt out, by the ſtraining."

But as the patient, whoſe caſe is now propos'd to my conſideration, cannot unload his bowels, unleſs, ſetting aſide every kind of artifice whatever, he ſuffer the inteſtine to come out; I ſeem to be throwing away my time, if I do not endeavour to invent any other artifices of that kind, and do not rather inquire into the cauſe, why the uſe of inſtruments, of this kind, is, in the preſent caſe, without any advantage, ſo that this cauſe being known, either the ingenuity of ſome ſkillful ſurgeon may be excited, to find out one of a quite different nature, which might be uſeful, or if be it found, upon the inquiry, that this cannot be done at all, that the part affected may, hereafter, be troubled with no inſtruments whatever.

(*q*) Cent. 2. obſ. med. 94.
(*r*) De fiſtul. n. 4.
(*s*) Schol. cit. ſupra ad. n. 3.
(*t*) L'art. de guerir les hern. p. 2. ſ. 2. c. 8.
(*u*) Cours d'oper. de chir. dem. 4.
(*x*) Schol. cit. ſupra ad n. 4.
(*y*) Cap. cit. ſupra ad n. 3.

8. And

8. And firſt, it is not to be ſuppos'd in the preſent caſe, that the inteſtine is, neceſſarily, to be ſuffer'd to come down, becauſe the excrements are ſo thick and hard, that they cannot paſs through thoſe inſtruments which I have ſpoken of; for if this had been the caſe, it would have been provided againſt long ago, and abſolutely prevented from happening, either by a ſuitable diet, or by ſolutive medicines, or by the injection of a ſmall quantity of a liquor, proper to lubricate, and ſoften. It therefore remains, that the relaxation of the whole inteſtine, or of its internal coat, muſt be ſuppos'd ſo conſiderable, that the one, or the other, deſcending, when puſh'd down by the excrements, in a great number of large rugæ, laid one upon another, form ſomething like a valve, eſpecially as often as being retain'd by any kind of artifice, it cannot altogether extend, and unfold itſelf, and by this means give an open paſſage to the excrements. And if this be the real ſtate of the affair, all artifices of that kind are to be remov'd; for as, by this means, that part of the inteſtine may be compreſs'd, betwixt the fæces which are increas'd above, and the inſtrument, no advantage can be expected from thence, but even a very conſiderable injury may, at ſome time or other, be fear'd.

Inſtead of theſe inſtruments then, a new one ſhould be ſought after, which might not only ſupport the lower part of the inteſtine externally, as the former have done, but might, at the ſame time, reach ſo far, as to be able to ſupport internally, and opportunely dilate, the relax'd parietes, that they may not, by being inverted, and puſh'd before the fæces, in the form of rugæ, or valves, ſtop up the paſſage of theſe fæces, when they are about to be diſcharg'd. It would be neceſſary, that this inſtrument ſhould be of ſuch a nature, as to render it eaſy of inſertion, into the inteſtine, and ſhould be moderately, and gradually dilatable, as ſoon as ever the neceſſities of nature may begin to require, nor ſhould there be the leaſt danger of its injuring the inteſtine, either laterally, or in the upper part of it, but particularly in the upper part: to prevent which danger, all the upper parts of the inſtrument might be inveſted, before its introduction, with the ſoft and freſh inteſtine of ſome little animal.

The well-known contrivance of thoſe inſtruments call'd ſpecula, which ſurgeons us'd to dilate the vagina uteri, and even the inteſtinum rectum itſelf, might perhaps, to a prudent, and ſkillful, contriver of inſtruments, ſupply a much better, and leſs diſagreeable, idea of this inſtrument, with which it would be ſufficient to keep that part of the inteſtine extended, that is eaſily dilated, I mean the part which is above the ſphincter; and to leave no larger a paſſage open through this part, that moſt reſiſts dilatation, than would be ſufficient for the ſoft, and almoſt fluid, excrements to paſs through; for care muſt be taken, by a ſuitable regimen, to keep them, conſtantly, in ſuch a ſtate.

But as I well know that moſt machines, when apply'd to their uſes, generally correſpond but little with the expectation of the inventors, and as in this caſe, in particular, I ſee what diſadvantages might ariſe, not only if an unexperienc'd hand ſhould introduce the inſtrument, and dilate the inteſtine, but alſo from the frequency of the introduction, and dilatation, and even from the very motion, and compreſſion, of the inteſtine, while the fæces

ſhould be expell'd; and as I cannot know, for a certainty, that the relaxation does not begin higher up, than the inſtrument can reach, I profeſs that I have enter'd into this diſcuſſion, with no other intention, than to excite others to look out for a more natural, and commodious idea: and if it were certain, that this could be reduc'd into practiſe ſafely, and without ſuſpicion of any danger, it would then, indeed, be neither improper, nor perhaps uſeleſs, to make the experiment thereof.

9. But if, as I am very much afraid, on account of the cauſes juſt now hinted at, it ſhould be taken for granted, univerſally, and not without reaſon, that in the palliative cure, there is no room for the trial of any inſtrument whatever, then nothing would remain for medicine to do, but to examine, whether in the methods of cure, which have been already made uſe of, in order to remove that relaxation, any remedy had been omitted, by which, if the diſeaſe could not be overcome, it might at leaſt be in ſome meaſure diminiſh'd.

10. Many aſſiſtances were formerly taken from ſurgery againſt this diſeaſe. Riolanus (*z*) recommended two cupping-glaſſes, to be apply'd, one to each ſide of the lower part of the os ſacrum, or to the buttocks, as Schacher (*a*) mentions, who expected ſome advantage from thence, when the chief cauſe of the diſeaſe conſiſts in the muſcles of the anus being languid. Yet I have no more expectation from this practiſe, than from two cauteries being apply'd to the lower part of the ſpine, which Mercurialis (*b*), following the ſectaries of the Arabians, has propos'd, and Marcus Aurelius Severinus (*c*) has confirm'd; unleſs, perhaps, they ought to be apply'd in a perſon whoſe habit of body was very different from that of our patient's, and in whom the prolapſus had been brought on, or continu'd, from too great an afflux of humours to the part.

But as to the famous remedy of that ancient ſurgeon Leonida, whom the celebrated man, Daniel le Clerc (*d*), ſuppoſes to be the ſame with Leonides, the phyſician ſpoken of by Cælius Aurelianus (*e*), under the title of Epiſyntheticus; I will neither omit the opinions of others, nor conceal my own. When diet, therefore, had been of no advantage, nor medicines had contributed any thing to the alleviation of the diſorder, and the evil was now grown inveterate, Leonida judg'd it to be neceſſary, and not at all dangerous, to burn the external, and extreme, part of the anus with ſome cauteries; for that, by this means, a ſolid cicatrix ſucceeding, the anus would be conſtring'd all round, and the prolapſus remov'd. Theſe things may be read ſomewhat more clearly, and diſtinctly, in Aetius (*f*), who has preſerv'd, and handed down to us, this, and other curative methods of Leonida: and this method has been taken notice of by Fabricius ab Aquapendente alſo (*g*), and by Riolanus (*h*).

As to Severinus (*i*), he not only mentions it; not only confirms, by many obſervations of his own, that the actual cautery had ſucceeded very happily with

(*z*) Sect. cit. ſupra ad n. 3.
(*a*) §. 9. cap. cit. ſupra ad n. 4.
(*b*) Cap. cit. ſupra ad n. 3.
(*c*) De effic. medic. l. 2. p. 1. c. 50.
(*d*) Hiſt. de la med. p. 2. l. 4. ſ. 2. c. 1.
(*e*) Acut. paſſ. l. 2. c. 1.
(*f*) Medic. tetrab. l. 4. ſerm. 2. c. 8.
(*g*) C. cit. ſupra ad n. 4.
(*h*) Sect. cit.
(*i*) Part. cit. c. 95.

him,

him, when applied to this part, though in other diſorders; but he calls the phyſicians timid, and ſlothful, becauſe they would not ſuffer him to apply the ſame method of cure, to a gentleman of the noble family of the Surgentii, whoſe prolapſus, like that of our patient, was of twenty years ſtanding, and had, like his, received no benefit from all kinds of medicines.

On the other hand, Blegny (*k*) entirely rejects this kind of cure, as not leſs troubleſome, than unuſual, in our preſent times. And Dionis (*l*) ſays, that he never ſaw it, calls the authors of it cruel, and the operation itſelf horrible, even to thoſe who hear of it: and believes that if there ſhould happen to be any medical practitioner, who would willingly try it, no patient, nor any one elſe, certainly, would conſent to it, and that with great good reaſon, becauſe theſe diſorders may be cur'd without it: although it does not at all appear, by what means he could prove this aſſertion, as he propoſes no remedy that ſeems to be equal to the cure of this diſorder, in our patient.

However, it is by no means neceſſary for me, here, to aſſent, either to the epithets of timid, and ſlothful, with Severinus, or to that of cruel with Dionis. For although I do not deny but the method of cure taught by Leonida, may be uſeful in a ſmall relaxation, when it is pretty low down, and that this is, in ſome meaſure, confirm'd by the obſervation of Cowper, which is pointed out above (*m*); yet in this relaxation that I am ſpeaking of, which is ſo very conſiderable, and ſeems to begin ſo high up in the inteſtine, I am very much afraid that it would not be of any great advantage, if it were of any advantage at all.

11. In the mean while, leaving to better judges than myſelf, the farther examination of theſe methods of cure, which were formerly made uſe of by ſurgeons, I go on to conſider a more modern inſtrument, the author of which teſtifies its having been very uſeful in many prolapſuſes.

This author is Blegny (*n*), whom I before mention'd, a man truly ingenious. He took the craw of a turkey-cock, and tied the orifice of it faſt to one extremity of a ſhort, and ſlender tube, made of ſilver; and at the other extremity, he introduc'd a ſtick, which was blunt, at its upper part, quite to the bottom of that pipe, and by this means, firſt introduc'd this pipe, and afterwards a proper part of the tube, daub'd over with aſtringent remedies, into the rectum; the remaining part of it he kept on the outſide of the anus, in ſuch a manner, that when he had taken away the ſtick, and, in the place of it, had inſerted into the ſame part of the tube, the pipe of a ſmall pair of bellows, and had driven in ſuch a quantity of air, as was ſufficient for filling the craw, the air could not return before the patient was willing, and being, conſequently, retain'd, would ſupport the relax'd parts, and cauſe by its frequent, and long-repeated uſe, that they ſhould, as far as poſſible, recover their former ſituation, and ſtrength. But it is better to ſee the accurate deſcription of this inſtrument, its delineation, and the manner of fixing it, in the works of the author himſelf.

It is true I agree with Dionis (*o*), readily, herein, that even this inſtrument is not without its inconveniencies, nor does it anſwer the end of retaining the

(*k*) Cap. cit. ſupra ad n. 7.
(*l*) Demonſtr. ibid. cit.
(*m*) N. 4.
(*n*) Cap. paulo ante indic.
(*o*) Demonſtr. paulo ſupra indic.

in-

inteſtine in its ſituation, at that time, when there is moſt need of it; I mean when the patient goes to ſtool; ſince it muſt, of courſe, be then taken out, and ſoon after be replac'd, when the inteſtine has been return'd back again. Yet I deny that this inſtrument produces, as he ſays, the ſame effect with bandages, and other external applications. And indeed, excepting the inconvenience, which is not very conſiderable, and that a cautious, and ſkilful, hand is requir'd to replace the inſtrument, I ſhould ſuppoſe that it would be not altogether without its advantage, eſpecially in the beginning of relaxations of this kind.

It might even be conſider'd, whether, inſtead of that craw, it would not be better to make uſe of the ſoft inteſtine of any animal, which was furniſh'd with ſlender coats, of ſuch a proportion, as to length, and breadth, as it was convenient, or neceſſary, to introduce, having the upper extremity cloſely ſhut up internally, and being daub'd over externally, with that medicine which I ſhall recommend below (*p*), to be made uſe of after going to ſtool: this inteſtine being thus ſufficiently introduc'd, and air being ſoon after injected, or even ſometimes a liquor of a proper quality, it might be entirely diſtended, or at leaſt to ſuch a degree, as not to bring on a deſire of going to ſtool.

It is not eaſy, perhaps, to find a more commodious, and at the ſame time a more innocent, remedy than this, in order to replace, and retain, in its native ſeat, the relax'd coat of the inteſtine, and even the inteſtine itſelf, ſo that by this means the ligaments of the inteſtine may be eas'd, and, the weight and extenſion being taken from them, they may have an opportunity of reſtoring themſelves, in ſome meaſure, and regaining their ſtrength. However, although I ſuppoſe, as I have already ſaid, that in the beginning of the diſorder ſome advantage might be hop'd from thence, and, certainly, more than from the tents, which others apply with the ſame view, impregnated and daub'd over, with aſtringent remedies; yet what uſe may be expected from it, in an inveterate diſeaſe, I confeſs, I do not ſee.

12. As to pharmaceutical remedies, it becomes me to be ſo much the more ſhort on this ſubject, as I am inform'd by the letter of the phyſician, who conſults me, that all the medicines have been already made uſe of, that could poſſibly be deviſ'd, whether of the agglutinating, vulnerary, or aſtringent kind, or ſuch as help the nerves; and as I ſee that all the books, both of phyſicians, and ſurgeons, are full of remedies of that kind. And although I ſee that, in the ſame letter, fomentations, ſemicupia, injections, cerates, fumigations, and other external forms of medicine only, of the ſame kind, are taken notice of; yet I do not doubt, but internal medicines, correſpondent thereto, were us'd at the ſame time. And, indeed, I very clearly conceive, that what could not hitherto be obtain'd by theſe remedies, is much leſs to be expected from them hereafter, as the diſorder is, in the mean while, become more conſiderable, and the cauſes of it more confirm'd.

Nevertheleſs, as long as the life, and the ſtrength, of the patient, are in a flouriſhing ſtate, the cure, perhaps, ought to be repeated; for it is certain, that a long-continu'd, and vigorous, method of cure, repeated cautiouſly, and prudently, could never be of any diſadvantage. And in this regimen,

(*p*) N. 13.

ſhould

ſhould be included all the moſt corroborating medicines, which however ſhould be taken from the claſs of thoſe that aſſiſt the nerves, rather than from thoſe that have ſtrongly aſtringent properties; for the fæces being harden'd by theſe, the patient muſt, of courſe, make uſe of more violent, and a greater number of, ſtrainings, in going to ſtool, whereby the diſorder would be more and more increas'd. For which reaſon, likewiſe, all thoſe medicines are to be rejected, that are call'd purgatives; for they lead to the injur'd part, and leave very troubleſome, and noxious, irritations therein. But if it is neceſſary to looſen the belly, ſuch things muſt be made uſe of, as will be preſently taken notice of in the diet, or ſome things ſimilar to them, that are quite innocent. And in regard to remedies, that are to be externally apply'd, I ſhould greatly prefer, as to the form, the ſemicupia, and injections; as to the matter, the ſtrengthening waters of warm baths.

13. It remains to ſpeak of diet, as a proper regimen, in this reſpect, is altogether neceſſary, ſince it not only aſſiſts the effects of the remedies, which are taken from ſurgery, and pharmacy, but alſo becauſe, if theſe remedies are not at all repeated, or repeated to no purpoſe, there is then no other method, beſides this, remaining, by which we can endeavour, with the greateſt eaſe, ſafety, and frequency, to render the diſorder, at leaſt, leſs troubleſome, or leſſen its danger. Mercurialis propoſes ſuch a kind of diet (*q*), as has a drying property: and there is no doubt but this regimen conduces much to ſtrengthen the habit: but if we conſider, and well-weigh, the very great, and frequent, inconveniencies, which would ariſe from the inteſtinal fæces being harden'd, by ſuch a method of living; it will certainly ſeem to us, and eſpecially after corroborating medicines have been ſo long made uſe of, to no purpoſe, that a mode of diet which is of a moiſt, and ſoftning nature, is to be prefer'd to that which is ſo powerfully drying, as ſuch a regimen would ſerve to keep the excrements ſoft, and, at the ſame time, correct their acrimony.

That very cautious phyſician, Franciſco Redi (*r*), in his advice againſt a hæmorrhoidal flux, and pain, join'd with a prolapſus of the inteſtine, at the time of going to ſtool, order'd meat-broth to be drunk in a morning, to the quantity of half a pint, without any ſalt, and in this broth he order'd to be previouſly boil'd, a pretty large quantity of violets, and after theſe could be no longer had except in a dried ſtate, he order'd, in their ſtead, ſuccory, or borrage, or bugloſs, or ſow-thiſtle, freſh or dried prunes, quinces, or ſomething of the ſame kind. He recommended the uſe of depurated whey, ſweeten'd with a julep, made either from the tincture of freſh violets, or quinces. He alſo recommended the uſe of aſſes, or goats milk. At dinner, and ſupper, amongſt other things, he order'd a pudding to be a conſtant diſh, but this was to be very ſimple, and to conſiſt chiefly of broth, in which apples had been boil'd, or ſome herbs of the number mention'd above, and ſometimes alſo a little barley, or rice. He prefer'd boil'd meats more frequently than roaſt. And omitting aromatics, and wine, he order'd dinner and ſupper always to be concluded with a ſcalded apple, or a bak'd pear, drinking after it three ounces of water, ſweeten'd with a ſyrup, made from citron peel.

(*q*) Cap. cit. ſupra ad n. 3.

(*r*) Opere dell' ult. ediz. t. 4. verſo il fine.

From theſe things that I have related, as they ſtand in the opinion of Redi, I ſhould not recede much in this caſe, or, at leaſt, only ſo far, as to prevent the bowels from being too much open'd. But if that regimen of Redi's were not ſufficient, for it ought, by being continu'd, to be ſufficient to keep the belly ſo far lax, as to prevent there being any neceſſity for ſtraining, or for ſitting long when the patient goes to ſtool; then, indeed, I ſhould not be againſt imitating Redi, alſo, in giving two drachms of the pulp of caſſia ſometimes, which ſhould be taken in the morning before the broth, of which I have ſpoken, and repeated again, in the ſame quantity, a little before ſupper, if the former had as yet produc'd no effect. But if, in ſpite of this regimen, the excrements, nevertheleſs, ſtill continu'd hard and dry, I ſhould judge that they ought not to be diſcharg'd, by the means of ſtraining, but by the aſſiſtance of glyſters.

Yet theſe glyſters ought not to conſiſt of more than half a pint in quantity, that they may be retain'd, with the greater eaſe, for a proper degree of time, and ought to be made up of broth alone, or the barley emulſion, as it is call'd, or an emulſion of rice, which had been previouſly half-burnt, as it were, and boil'd, and this alſo in imitation of Redi. Who, finally, gives great commendations to a certain yellow ointment, (call'd manteca) and made from roſes, ſuch as was prepar'd by the perfumers of the grand Duke of Tuſcany, affirming, that the prolaps'd inteſtine is much ſooner, and more eaſily, replac'd, if the extremity of it is ſmear'd over with that ointment, by which, beſides that the pains being alleviated, he ſays that the injur'd, and debilitated, part will be, not a little, corroborated.

However, the replacing of the inteſtine will be render'd leſs difficult, by the method of living preſcrib'd, and the ſparingneſs of diet. For by this means, neither a quantity of excrements will be accumulated in the neighbouring tract of the colon, which is a circumſtance, that is generally a very conſiderable obſtacle to the return of the prolaps'd inteſtine, nor will blood be generated, which either by its redundancy, or from any other diſorder whatever, can tend to render the weak part preternaturally thick. And as this may, alſo, happen from violent motions, and exerciſes, it will be equally neceſſary to avoid theſe likewiſe; and, to comprehend the whole, in a few words, every thing ought to be diſus'd, which experience itſelf, much better than the advice of any phyſician, has, through the long courſe of ſo many years, demonſtrated to be injurious.

14. Theſe things I had to obſerve, in regard to the very difficult caſe, upon which my opinion was requeſted, hoping that the learned, and noble patient, on whoſe account they are written, will be ſo condeſcending as to excuſe the haſty manner of putting them together, as I am, at this time, much taken up with many, and various purſuits, and that the very experienc'd phyſician who conſulted me, will make what uſe of them he ſhall think conſiſtent with his prudence, and the circumſtances of the patient: and I beg of the almighty God that he will ſucceed whatever may have been, or ſhall be, determin'd upon.

15. You have, here, the opinion juſt as I wrote it, at the time, that is in the year 1725, on the thirteenth day of Auguſt. In which, beſides the prolixity, there are other things, wherewith I am not very well pleas'd, at preſent.

ſent. But as it happen'd that I was to write on ſubjects little treated of, I could avoid neither the one nor the other. And I could wiſh there had been any one, ſince that time, whoſe anatomical obſervations would have ſet this affair in its deſirable light. But theſe obſervations, as they were then unknown to the very learned Schacher (*s*), and to me, ſo they are ſtill unknown. And what circumſtances are to be inquir'd into, particularly, in the bodies of thoſe whoſe inteſtine has been accuſtom'd to deſcend to a conſiderable length, will be ſhown by the foregoing opinion, yet perhaps not all. For who knows whether thoſe ligaments, which reſemble three ſmall bandages, going from the upper part of the rectum, into the neighbouring colon, are not, ſometimes, relax'd by too great moiſture, or drawn aſunder by the quantity of excrements, which is gathered together; or, by the violent and long-continu'd ſtrainings, to diſcharge the fæces, do not only ſuffer, in conſequence of this diſtraction, ſome of the laſt cells of the colon, but alſo a great number of thoſe tranſverſe rugæ, which are within theſe cells, to be extended, ſo as to increaſe the length of the prolaps'd inteſtine.

Care muſt be taken then, wherever bodies of this kind, which I ſtill much wiſh for, ſhall happen to be diſſected, to inquire, accurately, into the ſtate of theſe ligaments, and cells, or if both of theſe parts are in their natural ſituation, to ſee whether the internal rugæ, at leaſt, are not unfolded, and almoſt evaneſcent, which circumſtance alone, would ſuffer the internal coat, wherein they are, to be ſo greatly extended downwards, that is, in conſequence of being drawn, by the internal coat of the inteſtinum rectum, which is a continuation of that of the colon, and which, in my *Conſilium* (*t*), I have ſuppos'd, following after the modern medical writers in particular, may be thus inverted, and prolaps'd outwardly. Yet, at the ſame time, I think it ought to be inquir'd in theſe very bodies, how far this inverſion may really happen, or be allow'd of, as I have many doubts upon this head.

For the queſtion is not at preſent, as it was on a former occaſion (*u*), of one part only, and that to be compar'd, in ſome meaſure, with a kind of cuticle, as it were, which is ſeparated, but of the whole internal coat of the rectum: and that this ſhould be let looſe from the muſcular coat, ſo as not to be a dead part, nor yet to have any very violent ſymptoms join'd with it, is difficult to be believ'd among thoſe who have obſerv'd the innumerable, I do not ſay, ſmall fibres and nerves, but only the innumerable little arteries, and veins, by which one is join'd to the other.

Whether, therefore, theſe ſmall veſſels can be ſo relax'd, and extended, by degrees, as the great inverſions of the internal coat particularly require, which many ſuppoſe to happen in this caſe; or whether the example of tumours, in which it is certain that a great extenſion of the veſſels does really happen, takes place here, where the internal coat is ſaid to grow thick indeed, but ſtill to be preſerv'd flexible, and in a proper ſtate to be replac'd; or finally, whether theſe inverſions, which are generally ſuppos'd to be of the ſame nature in the rectum, as in the vagina uteri, are in fact of the ſame nature, and how far, will never be learn'd with more certainty from any thing, than from a very accurate diſſection of theſe bodies. Nor indeed can the opportunity of diſſecting bodies of this kind, be very rare, and

(*s*) §. 3. cit. ſupra ad n. 4. (*t*) N. eod. (*u*) Epiſt. 31. n. 20.

eſpecially in great cities. For this diſeaſe is fatal to many, that is, in conſequence of inflammation, and gangrene, ſeizing upon the inteſtine, when the replacing of it has been too long neglected. But it alſo, ſometimes, happens, in thoſe who have been taken off by other kinds of death, that many things offer themſelves, the examination of which may be uſeful, in reſpect to this matter, whether they have been liable to a prolapſus of the inteſtinum rectum, or whether, from any cauſe whatever, as, in a certain common ſoldier (*x*), "a prolapſus, or devolution, of the colon into the rectum," occurs, which in him was "equal in length, to a ſpan." And Salmuthus (*y*) did not doubt, but the colon, as well as the rectum, might be prolaps'd, when to the obſervation of a ſucking child (*z*), who forc'd the inteſtines out at the anus, in a violent epileptic paroxyſm, "to a very great length," he prefix'd this title, "a procidentia of the inteſtine colon from an epilepſy."

I wiſh he had diſſected the body of that girl, who was about fourteen years of age (*a*), in whom, from the neglect of a very violent teneſmus, "the "whole inteſtinum rectum, with a part of the colon, was forc'd out at the "anus, to the length of two ſpans and more." For as it could not be properly reſtor'd to its natural ſituation, and as a gangrene had already ſeiz'd upon the extremity of the rectum, ſhe died, he himſelf being ſurpriz'd, how ſo great a portion of the inteſtines could have fall'n down, from the meſentery. But if many, and various, bodies could, at length, be accurately diſſected, either of thoſe who died of a prolapſus, that had then afflicted them, for the firſt time, or of one which they had been troubled with before, or of thoſe who, as they had been ſubject to the ſame prolapſus, and that gradually increas'd to a great length (*b*), were differently affected with diſagreeable ſymptoms, and different kinds of uneaſineſs ariſing from thence, of whatever diſorder they may have died; it is not to be doubted, but it muſt be much more eaſy for phyſicians, to point out the cauſes, and cure, of this diſeaſe, when conſulted thereon.

16. But as the conditions of the caſe then propos'd, led me, in the theoretical part, to ſome things which are perhaps not very probable, ſo in the other part alſo, they naturally led me to many, which may be much more eaſily wiſh'd for, than brought about. But if the patient had not lain under that peculiar neceſſity, of removing every inſtrument, or artificial contrivance, from him, and ſuffering the inteſtine to be prolaps'd, when he wanted to diſcharge the fæces, aſſiſtance would not have been wanting, which I could propoſe, to keep the inteſtine in its natural ſituation, while the fæces were diſcharg'd.

There was, in the firſt place, the ring of Sarpi: in regard to which, beſides what I have related above (*c*), from Johannes Rhodius, I alſo remember to have read theſe things, in the life of Sarpi; that when he had long labour'd under this diſeaſe, and had, at different times, tried a great number of remedies, but all in vain, he, at length, began to inquire after a kind of inſtrument, whereby he might retain the inteſtine, for which reaſon, after many attempts, he had, at length, found out one ſo proper to the purpoſe,

(*x*) Act. n. c. tom. 2. obſ. 103.
(*y*) Obſ. med. cent. 1.
(*z*) 31.
(*a*) Obſ. 30.
(*b*) Vid. Epiſt. 65. n. 6.
(*c*) N. 7.

that, although he labour'd under the diſorder to the very end of life, he did not, for that reaſon, ſuffer an impediment of any action, any more than if he had been without the diſeaſe, and that the ſame was ſo ſimple in its contrivance, and ſo eaſily apply'd, that it had equally the ſame effect with others, to whom he had communicated it.

But if this life, by reaſon of the author's (whoever he may be now ſuppos'd to be, by a very great man, who will be commended in another place), I ſay, if by reaſon of the author's real, or craftily-pretended, ignorance of ſome things, ſo that in the Epiſtolæ Anatomicæ (*d*), I was willing to make no other uſe of this life, than for the ſake of refuting by means of it, *ad hominem* as the phraſe is, thoſe who had laid this real or pretended ignorance to his charge; if therefore it ſhould be ſuſpected in this point likewiſe; another inſtrument would not have been wanting, which I had ſeen taken notice of, in a certain opinion of our Valſalva's. That is to ſay, when the patient went to the cloſe-ſtool to diſcharge his excrements, a cover for it was at hand, perforated in the middle, and there furniſh'd with a leaden tube, which was firmly fitted to the aperture, and ſmear'd over with wax, externally, and on the upper border, not wider than two-third parts of the inch of Bologna, and about two inches long, but not to be admitted into the rectum above an inch and a half, nor without the aſſiſtance of a cautious ſurgeon, when the firſt experiments of it were made, ſo that if they ſucceeded happily, nor any thing was to be alter'd in the dimenſions of the tube, the fæces might be diſcharg'd in this manner, and the inteſtine not puſh'd out.

But if neither of the inſtruments had anſwer'd our expectations; for you perceive, even from the hints I have given in my opinion, what injuries, not to ſay what uneaſineſſes, might ſometimes ariſe from applications of this kind; there were ſtill others beſides theſe, that might be thought of. For you ſee, by way of example, what a kind of ring was invented, by the celebrated Baſſius (*e*), which, " without being any obſtacle to the diſcharge of " the fæces," is worn without any trouble, as he ſays, and after it has remov'd the diſeaſe, may be as eaſily taken away; for he aſſerts that it had remov'd the diſeaſe, and that when it had been of long ſtanding, in a ſhort time, even within the ſpace of two months. But let theſe things be ſufficient upon the ſubject of the prolaps'd inteſtinum rectum. In the next letter I will go on to conſider other diſeaſes. Farewell.

(*d*) 15. n. 68.

(*e*) Dec. 1. obſ. 4.

LETTER the THIRTY-FOURTH

Treats of Pain in the Inteſtines.

ALTHOUGH the greateſt part of the obſervations, of which the fourteenth ſection of the third book of the Sepulchretum Anatomicum conſiſts, relates to pains of the inteſtines; yet there are even many therein, which relate to other viſcera of the belly, and in both theſe claſſes are ſome, in which, not internal cauſes, but ſuch as came from without, blows, for inſtance, and wounds gave riſe to the pain. This example I do not chooſe to follow, as I have treated, or am to treat, of pains in other parts of the belly, on other occaſions, and of each in its proper place, and am likewiſe to write ſeparately, hereafter, of blows and of wounds. And I am alſo unwilling to be troubleſome by repetitions, which are ſo far from being avoided in the Sepulchretum, that, in this very ſection, we find many obſervations ſet down twice (*a*), and in the additamenta, to the ſame ſection, we find, by reaſon of not detecting the tricks of Blancard, three repeated under his name, that is to ſay, the fifteenth, the ſixteenth, and the twenty-third, the two laſt of which had already been given in this very ſection (*b*), as the firſt had been in the preceding eighth ſection (*c*), in the names of their real authors.

Nor is it my intention to imitate the author of the Sepulchretum, in dividing my obſervations into two claſſes, that is into thoſe which relate to the colic and to the iliac pain; not that I altogether diſapprove this diviſion; although Diocles Caryſtius, as Celſus teaches us (*d*), nam'd the diſeaſe, not of the ſmaller, but of the larger inteſtine, εἴλεόν; and Alexander Trallianus, as you have it in Salius (*e*), judg'd "that the iliac paſſion was nothing more "than a heightening, and increaſe, of the colic affection," and Salius ſhows * that the primary ſeat, and cauſe, of the ileos might be in both of thoſe inteſtines; but becauſe it is not ſo eaſy as many imagine, to diſtinguiſh the pains of one inteſtine, from the pains of the other, and, conſequently, not very eaſy, by means of the ſigns, that have been obſerv'd in patients, to divide the obſervations of this kind with ſufficient clearneſs, and preciſion.

2. For in regard to the iliac pains being ſaid to be more ſevere, than the colic pains, as without doubt they are, whether you ſuppoſe this to ariſe, from

(*a*) Confer. obſ. 1. §. 2. & obſ. 20. §. 14. obſ. 1. §. 13. & obſ. 24. §. 2. obſ. 1. §. 14. & obſ. 19. §. 4. obſ. 2. §. 1. & 2. obſ. 5. §. 2. & ſchol. ad §. 8. obſ. 19. obſ. 8. §. 11. & obſ. 14. §. 3. obſ. 28. & obſ. 30. §. 4.

(*b*) Obſ. 20. §. 12. obſ. 3.
(*c*) In addit. obſ. 5.
(*d*) De medic. l. 4. c. 13.
(*e*) De affect. partic c. 11.
* Ibid.

the

the quantity of veſſels, by reaſon of which, the ſmall inteſtines are more frequently found to be inflam'd, than the large, or whether you rather ſuppoſe it to ariſe from the number of the nerves, eſpecially if the villi, with which the ſmall inteſtines abound, to ſo great a degree, are to be refer'd to the claſs of papillæ; at leaſt, there is no doubt, but one perſon is more impatient of pain than another, and the cauſe of pain is different in different perſons, and in ſome leſs violent than in others; ſo that it is not eaſy to determine, which is really tortur'd with the moſt excruciating pain: and from hence, perhaps, it aroſe that Galen, ſome paſſages of whoſe works, that are contradictory to each other, Ballonius ſtudies to reconcile, has in one place ſaid, as you ſee in this ſection of the Sepulchretum *(f)*, that the iliac diſorders were the moſt violent, and in another place, that the colic diſorders were the moſt violent.

But as to the vomiting, which he has aſſerted to be the moſt violent, and continual, in the iliac paſſion, you will find that thoſe colic pains are juſtly excepted in the Sepulchretum *(g)*, which have their ſeat in that part of the colon, where this inteſtine lies contiguous to the fundus of the ſtomach.

And not to lead you away from the Sepulchretum, you may likewiſe be warned from thence *(h)*, how liable to exceptions frequently, and, for this reaſon, fallacious, that ſign may alſo be, which, in other reſpects, ſeems to be the chief, I mean that which is taken from the very ſituations of the ſmaller, and larger inteſtines. For you will find the words of Franciſcus Sylvius teaching, " that the colon is often carried, through " the " middle of the abdomen, to the navel, and ſometimes even quite to the " bladder, by a conſiderable deviation from its more uſual courſe." And if it be true, that when the colon deſerts its own proper ſituation, it takes up that of the ſmall inteſtines; you plainly perceive how much he may be deceiv'd, who depends greatly on the reſpective ſituations of theſe viſcera, in determining the diſorder. And not only they, whom Sylvius argues againſt, will be then deceiv'd, but they, alſo, who follow Sylvius. For when that part of the colon which generally runs in a tranſverſe direction, to the direction of the body, and lies in contact with the ſtomach, is not really in that place, but is ſo remarkably inflected downward; there is no doubt but thoſe perſons muſt err, who deny that this part of the colon is ſeiz'd with pain, by reaſon, that the pain, and torture, do not run acroſs the upper part of the belly, like a belt; and they alſo will, of courſe, blunder, who ſuppoſe, with Sylvius, " that a pain which has its ſeat in the circle, and " circumference, of the belly, is truly of the colic kind;" for the pain, which then ariſes, in the upper circle of the belly, cannot have its ſeat in the colon, which is not in that part.

3. And that what Sylvius has warn'd us of, does, in fact, frequently happen to the colon, not a few of the obſervations, both of Valſalva, and of mine, which have either been already propos'd, or are to be propos'd hereafter, will confirm: although I have not had, nor ſhall have, occaſion to take notice of, in theſe letters, all the bodies in which I have found it thus; for it is long ſince that I began to obſerve this variation, even before I hap-

(f) Schol. ad §. 5. obſ. 5.
(g) Schol. ad §. 2. obſ. 25. in fin.
(h) Schol. ad obſ. 41.

pen'd

pen'd to light on this paſſage of Sylvius, as the ſecond of the Adverſaria will demonſtrate (*i*). But in the third of the Adverſaria (*k*), I have alſo obſerv'd another variety, in the lower ſituation of the colon, which is by no means to be paſs'd over here: although there, in like manner, for the ſame reaſon, I could not, according to my cuſtom, commend thoſe who had obſerv'd it before me, Spigelius (*l*), and Riolanus (*m*); to whom, however, it ſeems to have happen'd, contrary to what has occur'd to Valſalva, and to me, that the colon has been, more frequently, winding in its termination, and has more rarely taken a pretty ſtrait, and ſimple courſe.

But be this as it will, as theſe flexures not only extend the colon, in ſome bodies, towards the right groin, but, ſometimes, as I have ſeen, raiſe it up by means of flatus to a turgid ſtate, and particularly at the navel; it certainly appears from hence, how eaſily the pain, which is in that inteſtine, may be then, without reaſon, ſuppos'd to have its ſeat in the ſmall inteſtine, of which this place is the common and natural ſeat. Both theſe ſpecies of variety then, are not uncommon, whether from the firſt formation of the body, or even from diſeaſe, as the words of Riolanus obſcurely hint (*n*): theſe words are, "I have ſeen the inteſtinum colon, not ſtretch'd out, directly, betwixt the "liver, and ſpleen, but inflected in the manner of an Italian *S*, and PRO-"LAPS'D quite to the navel:" and Spigelius (*o*), ſpeaking ſtill more clearly, and more generally, ſays, that the ſame inteſtine "when preterna-"turally diſtended with flatus, in colic pains, is remov'd from its natural "ſituation." But if you chooſe to ſuppoſe, that, for this reaſon, it was that I found, in an apoplectic woman (*p*), who had been ſubject to thoſe pains, the colon not only with fewer cells than uſual, but alſo writhing itſelf with larger turns than it generally does, in its extreme part, towards the navel, I ſhall not contend with you upon the ſubject, eſpecially as I ſee, from the obſervation which, in this ſection of the Sepulchretum, is the fifteenth, and is read more at large in the ninth ſection, of the firſt book, where it is the forty-eighth, as I ſee, I ſay, that Franciſcus Sylvius had ſuppos'd another woman to have labour'd under the ſame excruciating pains, not ſo much becauſe the omentum did not, as he had remark'd, cover all the inteſtines, or becauſe theſe were ſomewhat mov'd from their places; for the latter occurs pretty often, and the former very frequently; as, unleſs I am much deceiv'd, becauſe he had found, in the ſame woman, both the ſpecies of variety which are juſt now explain'd.

However, if the ſituation of the inteſtine colon were chang'd, only from a cauſe of that kind, yet the danger of erring would be ſo much the more to be fear'd, as the queſtion about theſe ſituations, is for the moſt part in thoſe perſons, who are wont to be ſubject to that cauſe. But in thoſe perſons, likewiſe, in whom the ſtomach is much dilated, and the liver enlarg'd in its ſize, that tranſverſe part of the colon, which lies under theſe viſcera, muſt be lower, in the ſame proportion as they are enlarg'd. Add to theſe, ſuch cauſes as depreſs the ſtomach, and with it the colon, as I have ſeen it hap-

(*i*) Animad. 2.
(*k*) Anim. 6.
(*l*) De hum. corp. fabr. l. 8. c. 5.
(*m*) Anthropogr. l. 2. c. 14.
(*n*) Ibid.
(*o*) C. cit.
(*p*) Epiſt. 3. n. 2.

pen

pen in a young man of Venice (*q*), from a very irregular inflexion of the ſpine. But beſides diſeaſes, there are alſo naturally different conſtitutions of bodies, and in theſe different conſtitutions, different ſituations of the colon. For even from the birth, as was hinted juſt now, it may be differently plac'd, and in gravid women, when the uterus is ſo much increas'd in its ſize, in the laſt months of pregnancy, that tranſverſe part of the colon is higher, as Spigelius obſerves (*r*).

4. And theſe things being granted, and it appearing ſufficiently from hence, why I do not divide the obſervations relating to pains, with which the bowels are tortur'd, in ſuch a manner, as to claſs ſome under the title of iliac, and others under the title of colic pains; it remains to point out the diviſion, which I chooſe to make uſe of. Firſt then, I will give thoſe in which there were pains from a cauſe that did not proceed from without indeed, but nevertheleſs was viſible; and in the ſecond place, thoſe, in which the cauſe lay hid quite within the body. And theſe two of the former kind I give you from Valſalva.

5. A man of forty years of age, of a temperament partly ſanguineous, and partly bilious, who had, ſometimes, been affected with a ſlight hernia in the groins, was ſeiz'd with an iliac paſſion, after eating artichoaks. A ſlight tumour appear'd in the groins: yet the patient denied his having any pain there; though he confeſs'd he had much pain in his belly, which was very much harden'd from the retention of the fæces. All remedies being without effect, he ſank under the violence of the vomitings, on the ſeventh day of the diſeaſe.

The belly being open'd, the inteſtines appear'd to be turgid with air, and were livid and black, in that part where, not very far from the cæcum, they were doubled, and with the annex'd portion of the meſentery, which ſeem'd to be fleſhy, as it were, deſcended into a hernial ſacculus, which was four inches long, and had a very narrow orifice, ſo that they could not return back through it, into the belly, after they were diſtended by the matter, that had fallen down into them. This ſacculus was in the right groin, and form'd out of the peritonæum indeed, that was produc'd and dilated, but not from a proceſs of it; as many believ'd formerly; which accompanies the vas deferens, and ſpermatic veſſels: and it even lay, anteriorly, upon this proceſs, and theſe veſſels, which were very tumid with blood: and was, internally, as the intercepted portion of the inteſtine was, of a blackiſh colour, or rather ting'd with a black that began to change into green, as if the colour had been given by a tincture of vitriol. And in the left groin was another ſacculus, very much ſimilar to the one I have deſcrib'd, except that the membrane, of which it conſiſted, had its fibres, and veſſels, not alter'd in their colour, or other qualities, from their natural appearances.

In the thorax every thing was ſound. Yet in the heart were polypous concretions, of a yellowiſh colour, with grumous blood, one pretty large, in the right ventricle, and another ſmaller in the left; but neither of them was produc'd out of the ventricles.

6. There was an evident cauſe of this pain, that is, according to the common phraſe, an incarcerated hernia. Of which there will be frequent men-

(*q*) Epiſt. 4. n. 16. (*r*) C. cit.

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tion made in this letter; but only as far as a part of the inteſtine being compreſs'd, is the cauſe of ſtrangulation to the veſſels of this compreſs'd part, and the parts neareſt to it: and the manner in which pain, inflammation, and ſphacelus, are brought on from hence, it is by no means neceſſary to explain. Other circumſtances in regard to herniæ, and the portion of the peritonæum, which accompanies the ſpermatic veſſels, I ſhall ſpeak of elſewhere (*s*). But of the iliac paſſion, I ſhall treat at different times, in this letter, as much as will be ſufficient for our purpoſe. But now you readily conceive, that where this diſorder ariſes, as it for the moſt part does, when an inteſtine is intercepted, and compreſs'd, that then the upper inteſtines are of courſe diſtended, by the matter, which is heap'd up above the interception, and that from this diſtention another cauſe of pain ariſes, which is alſo increas'd by the very corruption, of the matter collected, which corruption, is the conſequence of ſtagnation.

But how ſhall we ſuppoſe it to have happen'd, that in the hiſtory I have given you, the patient ſhould deny the exiſtence of any pain, in that part where the diſorder was the greateſt? Was it becauſe a ſphacelus had ſeiz'd the inteſtine which was intercepted, without any previous inflammation? For whether this could happen, we ſhall ſee on another occaſion (*t*), or rather was this the reaſon of the patient's denying the pain, that the inflammation had already degenerated into a ſphacelus? For there are other things alſo in that hiſtory, as it is written by Valſalva, which ſhow that it was not very accurately committed to paper.

Yet he does not make the leaſt mention of pain, even in the next hiſtory; though the very caſe will, of itſelf, ſufficiently ſhow, whether pain could be abſent, or not.

7. A man in his fiftieth year, who labour'd under an enterocele, was ſeiz'd with an ardent fever, and, after ſome days, with a vomiting of humours, which ſeem'd to be ting'd with ſoot, as it were: he at firſt made water with difficulty, and after that made none at all. The catheter was introduced by the ſurgeon, but to no purpoſe; for when it came near to the bladder, it met with an obſtruction. Wherefore being troubled with theſe ſymptoms the patient died.

The belly, and the ſcrotum, being diſſected, the inteſtines, which were fallen into the ſcrotum, were found to be affected with an inflammation: and notwithſtanding there was no ulceration in them, yet a little ſanious ſerum was ſeen in their interſtices. Some traces alſo of a ſanious humour, of that kind, were ſeen in the pelvis of the abdomen. The bladder was full of urine, although it had no mark of injury internally. And the obſtacle which was near the bladder, and had prevented the ſurgeon from introducing the catheter, was found to be nothing elſe but one of the foramina, by which the ſemen is diſcharg'd, dilated to ſuch a degree, that the extremity of the catheter, naturally, fell into it: for the ſame thing happen'd to the probe alſo, which was introduc'd, in the dead body, through the urethra that had been in part, laid open, in order to examine into this very circumſtance.

(*s*) Epiſt. 43. n. 6. & 7. (*t*) Epiſt. 35. n. 19. & ſeq.

8. Is it not more probable, that this foramen was the ſinus in the ſeminal caruncle, ſince deſcrib'd by me, which, in this man, had been immoderately enlarg'd? For if it had been one of the ſeminal ducts, it ſeems that the man muſt have labour'd under a flux of this kind. And there is no doubt but the orifice of that ſinus is ſometimes bigger, and ſometimes leſs, which has alſo been obſerv'd by the celebrated Henricus Baſſius (*u*). But it never more happen'd to me, as far as I now can call to mind, from the time that I publiſh'd upon this ſinus, in the year 1719 (*x*), though I ſhow'd it every year in the theatre, and ſometimes in more than one body, that I found any ſeminal duct, which open'd into it, and ſtill leſs that it ſeem'd to me, as it did to him, that "this hiatus was ſometimes only a ſlight fiſſure, or ſulcus, which appear'd after theſe parts had ſhrunk, and become flaccid.

But whether the caruncle within which this ſinus lies, as well as the ſinus itſelf, was enlarg'd; and whether, by this means, the orifice of the ſinus might, perhaps, be able to obſtruct a very ſlender catheter, and likewiſe cauſe a ſuppreſſion of urine, although the ſuppoſition is probable, yet as Valſalva has added nothing beſides, I ſhall the more readily leave it undetermin'd: becauſe; to ſay nothing of the cauſe taken notice of by Waltherus (*y*); when the neighbouring parts are greatly affected, it is not very unuſual, for the bladder to be drawn into conſent, and not expel its contents, ſo that Sennertus (*z*) recounted this among the ſigns of inflammation of the inteſtines: and indeed Cælius Aurelianus (*a*) plac'd, formerly, among the reſt of the evils that attended the ileos, "a total ſuſpenſion of the offices of the bladder and belly." But of the ſuppreſſion of urine I ſhall ſpeak hereafter.

Now let me ſubjoin to theſe two obſervations of Valſalva's ſome of my own.

9. A young man whoſe occupation was that of a huſbandman, had had a rupture of the inteſtine into the ſcrotum, in the right ſide, but as the inteſtine, was remov'd from thence, replac'd, and retain'd, by means of a bandage, or truſs, he ſuffer'd no injury from thence till the uſe of that retentive bandage was omitted. This however being at length omitted, it happen'd, after he had been troubled with an intermitting fever, for about two months, and had lately fill'd himſelf with hard flour dumplins and other groſs food of the ſame kind, that the inteſtine fell down again, into the ſame place. And from that very day, which was the laſt of October in the year 1705, he began to be ſeiz'd with a vomiting of a bitter matter. On the fourth day of the diſeaſe, a ſingultus came on, and a pain of the ſcrotum. A fotus of warm lixivium being applied to the ſcrotum the pain ſeem'd to be ſomewhat alleviated. But as the vomiting and the ſingultus continu'd, and he was, beſides, troubled with pains of the belly, and a thirſt, he was brought, on the ſixth day, into the hoſpital of St. Mary de Morte at Bologna.

But there the hand of the ſurgeon was not of any advantage; and the remedies of the phyſician gave only a little alleviation. For the ſingultus was

(*u*) Dec. 1. obſ. anat. 5. §. 9.
(*x*) Adverſ. 4. animad. 3.
(*y*) Diſſert. de collo viril. veſicæ &c. §. 3.
(*z*) Medic. pract. l. 3. p. 2. ſ. 1. c. 2.
(*a*) Acut. paſſ. l. 3. c. 17.

remov'd, as the vomiting was alſo; but the latter only for a ſhort time, when the *emplaſtrum de cruſta panis*, as it is call'd, was apply'd to the region of the ſtomach, and a glyſter was thrown up made of the oils of linſeed and violets. I firſt ſaw him on the ſeventh day. There was a ſlight pain in the ſcrotum. I heard that the pulſe was leſs frequent, than it had been the day before: but it was lower, and more weak, than was ſuitable to ſo young a man. His thirſt ſtill continu'd. Nor did he diſcharge any fæces, except when the oils I have mention'd were injected.

And, indeed, after they had, on this very day, made uſe of a carminative decoction, as it is call'd, by way of glyſter, to which ſome clarified honey was added, with two drams of the electuary, that is known by the name of *benedicta laxativa*; the vomiting of bitter matter return'd, in which there was a round worm; but the glyſter did not return till after many hours. On the eighth day, another worm was diſcharg'd. The abdomen being tenſe, and reſounding, as it were, under the hand, after the manner it does in a tympanites, which I had alſo obſerv'd the day before, it did not ſuffer any pain from pretty rough handling, not even in the epigaſtrium, where the patient felt a kind of little biting pain. When I aſk'd him whether he felt any heat likewiſe, he anſwer'd in the negative. The pulſe was, in other reſpects, ſimilar to that of yeſterday, but much more frequent. His tongue was dry. His urine had a ſaturated colour. Under his eyes was a lividneſs, and, even without this, his face had a very unfavourable appearance. The night following was reſtleſs.

On the ninth day, every thing was in the ſame ſtate: the countenance and pulſe were even worſe. For the latter was ſtill more frequent, but when you preſs'd it, it gave little or no reſiſtance. And the former was nearly of the ſame kind with that which you call the facies Hippocratica. And though the patient had been troubled with an anxiety on the preceding days, had a feeble and lamenting tone of voice, and was every now and then changing the ſituation of his body and his limbs, yet all theſe ſymptoms were ſtill more remarkable on this day. For, beſides a pain which continu'd conſtantly in the whole belly, the ſenſation of biting, as it were, recurr'd at times, in every part, but particularly in the epigaſtrium. There was no pulſating pain, for this I particularly aſk'd, nor any pulſation in any part. Nor was the pain, which he felt in the ſcrotum, or in the neighbouring part of the belly, in theſe laſt days, of any great moment.

However, when I felt the pulſe, I found that the ſkin was really rough, and dry, and yet not hotter than was to be expected. Having taken ſome food, he found himſelf a little better. He alſo ſaid that he had been reliev'd by the glyſter of oil, that had been given him the day before, and this he had alſo ſaid, at the time of its being given. But on this day another being thrown up, of broth in which the ſeeds of coriander had been boil'd and ſugar, he threw up the food he had taken while the glyſter came away. In the evening he ſlept. Being aſk'd after his ſleep how he was, he anſwer'd that he felt a ſtrange kind of pulſation in the epigaſtrium, and that there was ſome ſenſe of heat in the belly. In the mean while, he was troubled with a vomiting of a more fluid matter, than he had been heretofore, which was at intervals, alſo, of a yellowiſh colour. And this vomiting

ing continuing through the whole night, together with the reſt of the ſymptoms that I have mention'd, he expir'd in the morning, that is on the tenth day of the diſeaſe.

The belly contain'd a great quantity of extravaſated matter, of the ſame kind with that which had been thrown up by vomiting: and the ſtomach, and ſmall inteſtines, were very much diſtended with the ſame, quite to the hernia: but in the whole of this tract, was no more than one worm, like the two others which had been thrown up by vomiting. The large inteſtines were empty, white and ſound. The ſtomach was alſo ſound. But the adjoining inteſtine, which receives the biliary and pancreatic duct, was ſo livid, in conſequence of inflammation in that part, that it had already a gangrenous ſmell. An inflammation more ſlight, and not yet livid, affected the jejunum in ſeveral places, and the much greater part of the ileum. For the remaining part, I mean that which lay moſt contiguous to the colon, was affected rather with a gangrene, than with an inflammation, as the deſcription of the hernia will ſhow.

The ſacculus was of the form of a pear, and conſiſted of a coat, which was not leſs thick, and firm, than the pulmonary artery. It was cover'd not only by the ſcrotum, and the dartos, but alſo by the cremaſter muſcle, and with that membrane, upon which this muſcle lies, in common with the teſtis, and the veſſels that go thereto. The teſtis was under the ſacculus, and the veſſels adher'd externally, on the internal ſide, and went to the belly, near to the orifice of the ſac, but not through that orifice. This orifice was like a pretty thick ring, which the peritonæum, and the ſurrounding tendon, form'd: and it admitted, beſides the inteſtinum ileum, and a ſmall part of the meſentery, which was annex'd to it, the omentum alſo, of which I, for that reaſon, had ſeen ſcarcely any part covering the inteſtines, on the left ſide, becauſe it was drawn towards the right ſide, to the hernia: nor did it only go down to the fundus of the ſac, but forming itſelf into a round body, which I ſhould not have known to be made up of the compreſs'd ſubſtance, of the omentum, if I had not cut into it, return'd up again from thence, and connected itſelf to the intercepted ileum, not far from the oriſice of the ſacculus.

But whatever part of the omentum was contain'd in this ſacculus, I found connected thereto, by a rediſh kind of body, that was interpos'd, and was flaccid in its ſubſtance, ſo that it could eaſily be ſeparated from the omentum, and the ſacculus; nor did it ſeem to be any thing elſe but membranous cells, full of ſerum and blood. The ileum, however, was neither connected to the ſacculus, nor did it reach to the bottom of it; but curving itſelf in the manner of an arch, a little below the orifice, it return'd into the belly, by the ſame way it had come down; ſo that if you diſpos'd it regularly, you would find that no more than four or five inches of the inteſtine was intercepted. All this part was affected with a gangrene, and of a black colour; but ſtill much more ſo, where it was conſtring'd in the orifice of the ſacculus: and the circumference of this orifice was no leſs black and fœtid, as the neighbouring upper part of the ileum was; and this was even ſo tender, or rather rotten in its ſubſtance, that it could not ſupport the force of the humour, which diſtended it, but being perforated with one

foramen of a pretty conſiderable ſize, pour'd out its contents by that way, into the cavity of the belly. Among the remaining viſcera of the belly, which, as well as the inteſtines, were as yet conſiderably warm, notwithſtanding it was thirteen hours after death, before the body was open'd, the liver had alſo contracted a diſeaſe; for it was black on its edge, and on the hollow ſurface, together with the gall-bladder, which was of a moderate ſize, ſomewhat black.

In the thorax every thing was ſound, although in the right ventricle of the heart, there was a polypous concretion, of a yellowiſh colour, and ſoft; which extended its almoſt-white appendages from thence, quite into the jugular veins.

10. In regard to the many things that might be obſerv'd here, ſome I ſhall hint at more properly below, and others I ſhall touch upon, as ſoon as ever I have given you another obſervation, which I took about four months after the former, in the ſame hoſpital.

11. A woman of more than fifty years of age, who had already labour'd under two herniæ, for the ſpace of two and thirty years, both of which were on the left ſide, one at the navel, and the other at the pubes, having, by chance, fallen from a place that was not very high, was not at all hurt by her fall, except that ſhe receiv'd a contuſion about the top of the ſcapula and the ſhoulder bone. From this contuſion ſhe eaſily recover'd, but in the mean while, began, at the interval of a few days after her fall, to have a very great coſtiveneſs, and a little after to throw up, by vomiting, a yellowiſh, and fluid matter, which had exactly the ſame ſmell, as the excrements, diſcharg'd from the rectum, generally have. The vomiting came on at different times, but more particularly two or three hours after food had been taken in. The pulſe was neither frequent nor devoid of reſiſtance, when preſs'd under the fingers; it was extremely ſmall, eſpecially after vomiting, and grew leſs every day. As glyſters were of no uſe, mercury was given twice, to the quantity of two drams, the firſt time without any effect, but the ſecond time with ſuch an effect, that the patient had three ſtools, ſolid excrements being diſcharg'd the firſt, and the ſecond time, and the third time fluid. Nor did it ſeem that this remedy had done any miſchief. Yet the woman died about twelve hours after taking mercury the ſecond time, on the fourth, or fifth day, after the vomiting had begun, and half an hour after the time in which ſhe had laſt vomited; whereas, through the whole courſe of the diſeaſe, ſhe had neither labour'd under any evident fever, nor convulſion, and had born the pains of her belly with ſo little complaining, that I have no remark made upon them.

When the abdomen was cut into, and its cavity laid open, a very ſtrong ſmell of putrefaction iſſued forth. The inteſtinum jejunum, and the neighbouring part of the ileum, were univerſally diſtended with the ſame kind of matter, which had been thrown up by vomiting. But the remaining part of the ileum, and the large inteſtines, were contracted. The jejunum being diſtinguiſh'd, in ſome places, with lines of a lively red, and in a longitudinal direction, was in other parts of a brown colour, mix'd with red, as the ileum was likewiſe, almoſt in every part. But I found this laſt-mention'd inteſtine, not far from the jejunum, to be much more conſiderably affected, to the

the extent of three or four inches; which was the very part of it, that together with the annex'd meſentry, went down into the ſacculus of the lower herniæ, curv'd into the form of an arch. For although this prolaps'd part of the inteſtine, was neither connected to the ſacculus, nor to the orifice of it, which reſembled a kind of ring, as it were, yet being ſeiz'd with a gangrene, it was of a bloody colour inclining to black, and wept a bloody ſerum from its ſurface. However, no inteſtine, but only a part of the omentum, enter'd the upper hernia, which when look'd upon externally, was divided into two little mountains, or riſings, as it were, and internally it was made up of one ſac, into which the peritonæum had been extended.

As, beſides the inteſtines, we look'd over the other viſcera of the belly; for the thorax and the head were not open'd; we obſerv'd the liver to be ſomewhat hard, the ſpleen lax, and externally livid, but only in ſome places. The ligaments of the uterus were black: but the uterus itſelf was very ſmall, and its parietes were very thin. And theſe being cut into, the ſubſtance of them appear'd to be ſo livid in the middle, that it ſeem'd to be inclin'd to a gangrenous ſtate. As I had obſerv'd the uterus to be ſeated a little lower than uſual, it came into my mind to inſpect the vagina, that I might ſee how low the uterus had fallen down, into that cavity. And it happen'd, that no ſooner had I laid the labia aſide, and diſcover'd the orifice of the vagina, but a certain body appear'd to be puſhing forwards, which at firſt any one might have taken for the os uteri. But as I had, juſt before, ſeen the uterus not to be in ſo low a ſituation, that if it were even extremely large, it could have reach'd thither; I diſſected that and the vagina, immediately after taking them out of the body, and found the glandular body of the urethra to have become ſo thick, and to have drawn the vagina, which was in other reſpects lax, and without any rugæ, downwards in ſuch a manner, that the extremity of it, which is perforated to make an orifice for the urethra, might eaſily be taken for the os uteri falling downwards, and eaſily impoſe upon a ſurgeon who was not well-experienc'd, not to mention that it might eaſily impoſe upon a midwife.

12. But theſe laſt circumſtances relate to another ſubject. Let us now attend to what relates to the preſent. As to the woman's having ſcarcely complain'd of pains in the belly, and being without a fever, through the whole of the diſeaſe, do you think that theſe circumſtances can be accounted for, from ſuppoſing the iliac paſſion to have been produc'd in her, "by reaſon "of the expulſive faculty being aboliſh'd," as Salius ſays (*b*); or by reaſon of "an atonia, or loſs of tenſion, from the nerves of the inteſtines being ob-"ſtructed," as the opinion of Ruyſch (*c*) is? The former of theſe authors ſays, that ſuch is the ſtate of the caſe, "when attended with no pain;" and the latter did not at all doubt, but for this reaſon it was, that the ileos, in a certain woman, had been attended "with no remarkable pain or fever."

But not to enquire now, into what we ſhall ſee below (*d*), whether, when the inteſtines are in ſuch a ſtate, the ſeveral contents thereof can be thruſt back, and driven upwards, into the ſtomach, ſo as to be thrown up by

(*b*) C. cit. ſupra ad n. 1.
(*c*) Obſ. anat. chir. 91.
(*d*) N. 30.

vomiting,

vomiting; and not to diſcuſs this point, whether the other ſigns of that conſtitution, which Salius enumerates, did really exiſt in the woman whom I have deſcrib'd, it is paſt a doubt, that neither Salius, nor Ruyſch, ſuppoſe an inflammation of the inteſtines to exiſt at that time; for both of them mention this ſeparately, and the firſt of them expreſly ſuppoſes, in caſe of inflammation "a fever, and together with it, violent pains, whereby the patients are violently excruciated." Is it poſſible then, that there could be an atonia in the inteſtines of this woman, where it is manifeſt there was, at the ſame time, an inflammation? Be this as it will, it was certain that none of the many cauſes of this diſorder, which Salius enumerates, had preceded. But in regard to the queſtion, whether a fever may ſometimes be abſent from an inflammation of the inteſtines, I ſhall have another opportunity of determining that hereafter (*e*).

13. But now if we conſider what are the conſequences of inflammation, in the two hiſtories I have given you, it will be eaſy to conceive, how much it behoves every phyſician, whoſe intention it is to prevent the progreſs of this diſeaſe, to admit of no delay; and what remedies he ought to be ſuſpicious of, when the diſorder has already made ſome progreſs, leaden bullets, for inſtance, and mercury. For if the inteſtines, being rotten from ſphacelation, as in that young man, who was a huſbandman (*f*), do not reſiſt even the matter which they contain, we muſt beware of increaſing their contents, by ſuffering the patient to take in more than is abſolutely neceſſary, and ſtill more muſt we be cautious, how we make him take in the moſt ponderous ſubſtances, which would open a paſſage for themſelves, through the ſubſtance of the inteſtines, inſtead of opening the natural paſſage, and by this means accelerate death. And this happens much more eaſily, where there is, at the ſame time, ſuch a conſtriction of the inteſtine, as ſuffers nothing to paſs through it, till the inteſtine is replac'd.

For the ſame conſtriction, by vitiating the inteſtine that lies immediately above, renders it unequal to ſupporting the diſtention, and the weight; and, at the ſame time, the matter which diſtends, and loads it, is obſtructed, in that very place, where the inteſtine is moſt weak, and diſeas'd. But yet Hoffmann (*g*), you will ſay, ſav'd a woman in a volvulus, from the inteſtine being intercepted in a bubonocele, by giving quickſilver to the quantity of half a pound; although thoſe are not wanting who think this caſe almoſt incredible. To me, however, it ſeems the more credible, becauſe Alphonſus Khonius (*h*) had, long before, remov'd the ſame diſorder in a man, from an inteſtine being intercepted in an oſcheocele, or ſcrotal hernia, by giving him nine ounces of quickſilver. But altho' the ſymptoms, in both caſes, were violent, yet the conſtriction of the inteſtine might be leſs, and it is certain the diſorder had not yet proceeded to a ſphacelus: as it is, likewiſe, certain that this was not the caſe, in the great number of patients who, as we read in ſeveral authors, were cur'd of a volvulus, by taking even a much greater quantity of this metal.

In reſpect to thoſe patients then, in whom the inteſtines are as yet firm, and ſtrong, I had never any fear of this kind; for it firſt aroſe from ſeeing the

(*e*) Epiſt. 35. n. 20.
(*f*) N. 9.
(*g*) Medic. rat. t. 4. p. 2. ſ. 2. c. 4. obſ. 3.
(*h*) Eph. n. c. dec. 3. a. 9. obſ. 79.

ſtate

ſtate of the inteſtines, in that huſbandman, when diſſected, which put me on ſuppoſing how much the inteſtines might be weaken'd in others, alſo, when the diſeaſe was much advanc'd. And I wonder'd, from that time, to this very day, on which I revis'd this letter, that I had, to my knowledge, lit on no writer in practical medicine, who, when he ſpoke of this remedy, againſt the diſeaſe in queſtion, as moſt of them have done, gave us the leaſt warning of this probable danger, beſides one whoſe opuſculum *(i)* I have lately read, I mean that eminent phyſician Mead, who very ſeriouſly admoniſhes us, " that we ought not to delay long " the uſe of quickſilver, in the ileos, if other remedies are of no advantage, " becauſe it is to be fear'd, leſt a " gangrene ſhould ſucceed the inflammation, as frequently happens, by " which the coats of the inteſtine, being corrupted, ſuffer the ponderous " metal to eſcape through them, into the abdomen."

Nor do I ſuppoſe that you would think of objecting to this caution, the obſervation of the celebrated Wahrendorff *(k)*, which relates to the hiſtory of a patient with an iliac paſſion, in whom half a pound of quickſilver, which had been given, had reach'd quite to the colon, and had not burſt through the corrupted ſtomach, or the duodenum, which was affected with a ſphacelus. For as the patient died " three days after " he had taken the mercury, you eaſily perceive, that in this ſpace of time, the inflammation, which was ſtill in the jejunum, and the ileum, might have degenerated, in the duodenum, and ſtomach, into a ſphacelus, which did not exiſt before. And I ſuppoſe you would make uſe of much the ſame kind of anſwer, if any one ſhould object the obſervation of Schroekius *(l)*, who in a patient that died of an obſtinate obſtruction of the bowels, found about two pounds of quickſilver, at the beginning, and termination, of the inteſtinum ileum, and ſaw it adhering to the coats of this inteſtine divided into very minute particles, without theſe coats having been perforated thereby, notwithſtanding the inteſtines were not inflam'd indeed, but ſo extremely weak, that, being handled a little roughly, they were burſt through " in ſeveral places." For there were more than twenty days betwixt the laſt time of taking the mercury, and the patient's death, ſo that the inteſtines being diſtended with air, and with fæces, they might, at length, become corrupted, in the latter part of the time; nor is it certain whether they were, in fact, thus rotten in thoſe places, alſo, in which the quickſilver had ſtagnated.

14. You will perhaps aſk, why in the patients whom I have deſcrib'd, the inteſtine was not replac'd? And why, as it was not replac'd, a part of the contents, nevertheleſs, eſcap'd from the ſmall, to the large inteſtines, in ſome of the caſes. In regard to the firſt enquiry, ſuppoſe that ſome were brought into the hoſpital, much later in the diſeaſe than to admit of this operation, that others were brought in early enough, but at that time, when ſcarcely any of the ſurgeons, in the greater part of the cities in Italy, were daring enough to make uſe of the knife, in order to lay open the narrow paſſages, which prevented the inteſtines from being replac'd, by any other means.

In regard to the part of the matter contain'd in the inteſtines having paſs'd

(*i*) Monita medica c. 7. ſ. 2.
(*k*) Act. n. c. t. 3. obſ. 131. ante fin.
(*l*) Eorund. dec. 3. a. 5 & 6 obſ. 299.

through theſe narrow paſſages, in ſome patients, I would firſt have you obſerve, that the fæces, which I have ſaid was diſcharg'd by means of glyſters (*m*), had been below the place of conſtriction, before the inteſtine was conſtring'd; and that it may happen in volvulous patients, not only by the aſſiſtance of art, but by the help of nature, that the contents of the inteſtines, which are below that part, may be diſcharg'd, Salius (*n*) has confirm'd, in oppoſition to the common doctrine at that time, not only by reaſon, and his own experience, but by the experience of Hippocrates (*o*) alſo, in the woman who lay ill at the houſe of Tiſamenus, except that he aſſerts this to happen, while the diſeaſe is coming on, and not when it is already form'd.

But in the woman whom I have deſcrib'd (*p*), it is evident that this happen'd near the cloſe of a mortal diſeaſe, and that not only the contain'd matter which was below the conſtricted inteſtine, had been, more than once, diſcharg'd by ſtool, but finally, perhaps, even a part of that which lay above the conſtriction, and eſpecially the mercury; unleſs you ſhould ſuppoſe that this remedy given in its ſimple ſtate, in a very ſmall doſe, and without any purging medicine being join'd with it, had a power of propagating I know not what irritation through the intercepted parietes of the inteſtine, which were not yet ſeiz'd with a ſphacelus indeed, but were affected with a gangrene. Yet as this is not eaſy to ſuppoſe, it will ſeem very probable, that the inteſtine was leſs cloſely conſtricted in this woman, than in the young huſbandman (*q*), ſo that the weight of the mercury, aſſiſted by the change of ſituation in the body, by the agitation of vomiting, and by the preſſure upon it, might have been able to paſs through that ſhort tract of the inteſtine, and after that, by the help of the ſound inteſtines, promote the diſcharge of the matter which was contain'd below the conſtriction. But I will now give you one of thoſe examples, in which the inteſtines did not ceaſe to make ſome little diſcharge, through the whole courſe of the diſeaſe.

15. Mary, the wife of Antony Franciſcati, a carman at Padua (for the very extraordinary number of valves, that I found in the pulmonary artery of this woman, made me enquire, very particularly, into her name, and other circumſtances relating to her) aged thirty-nine years, of a moderately good habit of body, not a bad colour, and much leſs of an icteric complexion, having had many children, the laſt of which ſhe had given ſuck to for ſix months, when ſhe was ſeiz'd with this fatal diſeaſe, and having been ſubject to no other, except a little femoral hernia, from which this laſt diſorder, at length, had its origin, and which ſhe, having been accuſtom'd to replace of herſelf, whatever part it was that fell down from the belly, had attempted to replace now, likewiſe, for ſeveral days together, but not being able to ſucceed, was ſeiz'd with a fever and vomiting, and the other ſymptoms which generally attend this diſorder, except that ſhe could always make ſome little diſcharge by ſtool. She was at length brought into this hoſpital, much later than ſhe ought to have been, where, though to all appearance ſhe was like a perſon who was about to die very ſoon, ſhe nevertheleſs drag'd on her

(*m*) N. 9.
(*n*) C. cit. ſupra ad n. 1.
(*o*) Epidem. l. 3. ſ. 2.
(*p*) N. 11.
(*q*) N. 9.

life, for many days together, and even on the laſt of them, ſeem'd to be ſomewhat better, and to be eas'd by the glyſters which were thrown up, till, at length, on the twentieth day of November, in the year 1704, ſhe died.

The belly being open'd the day afterwards, and the hernial ſacculus, at the ſame time, laid bare, which was thick, and eaſily diviſible, into many laminæ of coats, as it were, it was obſerv'd to be quite disjoin'd from the ligamentum teres of the uterus, but connected to the crural veſſels, to which it lay contiguous, on the internal ſide: nor had it a narrow orifice; but all the confinement which the hernia ſuffer'd, was owing to the lower border of the external oblique muſcle of the abdomen, that lay upon it, which border is call'd the ligament of Poupart, or, rather, the ligament of Fallopius; whereas it is in fact only the tendon of that muſcle (*r*); in which opinion very ſkilful men agree with me, and amongſt theſe Heiſter (*s*), and if you read him attentively, Platner alſo (*t*). Under this border then, was intercepted ſome part of the neighbouring inteſtinum colon, yet in ſuch a manner, that a paſſage remain'd ſufficiently open through it, only the paries thereof was ſhut up, which had lain in contact with the orifice of the ſacculus. This paries, cohering with the ſacculus, was black and corrupted; and the neareſt part of the inteſtine, which lay without the ſacculus, was green.

The internal parietes and the belly were green alſo, and ſmell'd very ſtrong in moſt places. Yet in the viſcera of this cavity, I remark'd no morbid appearances, except in the gall-bladder, which was ſomewhat larger than it ought to be, and with a bile, that was not of a black colour, contain'd ſixteen calculi, which ſcarcely differ'd from each other, in magnitude, being all of them ſmall indeed, but not very ſmall, externally yellow, and made up of many ſmooth ſurfaces. And having apply'd one of theſe calculi to the flame, in the moiſt ſtate, in which it then was, I ſaw that it burn'd, not without ſparkling, and melted, but that it did not cheriſh and preſerve the flame.

As we diſſected the remaining part of the body, on the ſame day, and on the following days; for the other viſcera were very proper for demonſtration, and the muſcles were extremely red; nothing offer'd itſelf to our obſervation, in any other part, which can be ſuppos'd to relate to the preſent ſubject, except that in the medullary ſubſtance of the brain, were a great number of bloody points, and a great quantity of blood, which gave riſe to theſe, as both the venæ cavæ, and the veins that flow into them, and eſpecially the vena azygos being diſtended therewith, ſignify'd; and the whole left lobe of the lungs was, on one ſide, connected to the pleura, and on the other, to the mediaſtinum, and, finally, the thyroid gland was ſomewhat thicker than it naturally is: although many other circumſtances occur'd which are not unworthy of being notic'd in another place. One of which I will not paſs over at preſent, as it had never before occur'd to me, nor had I ever heard, or read, that it had been ſeen by any one, nor did I even hear afterwards, from very learned foreigners, who came with great politeneſs to viſit me. And this was the reaſon, why, in pointing out ſome of my obſervati-

(*r*) Adverſ. anat. 3. animad. 1.
(*s*) Compend. anat. not. 4.
(*t*) Inſtit. chir. §. 793.

ons, to the celebrated Morand (*u*), in as few words as poſſible, as my cuſtom is, and particularly paſſing over the reſt, as they had been made by others, as well as by me, I excepted this one.

That is to ſay, in a woman, who had been ſubject to no diſorder, which related particularly to the circulation, and had reach'd to the age which I have mention'd above; and in whom, every minute part of the heart, and the adjoining veſſels, being accurately examin'd by me, ſhow'd no diſeas'd appearance whatever, nor any thing preternatural, I found at the orifice of the pulmonary artery, inſtead of three valves, four valves, and demonſtrated them to a crowded circle of learned men, and of ſtudents who were preſent, being ſimilar, in their appearance, to thoſe that are generally found there, except that one was in every dimenſion conſiderably larger than uſual, as when you come hither, you ſhall, ſome time, or other, ſee; for I ſtill keep them preſerv'd in a proper liquor: and this was ſeated anteriorly, and towards the left ſide, in reſpect to the others. But when I revis'd this letter, I was pleas'd at my having ſaid above, that this was a very rare obſervation, indeed, but not that it was the only one. For, at length, among that great number, and variety, of obſervations, which are publiſh'd by the celebrated Jo. Zacharias Petſche (*x*), as being taken in concert with his preceptor Caſſebomius, I lit on one of another woman, in whom "the pulmonary "artery had four valves, that is to ſay, three large ones, but the fourth "a leſs." We alſo read that the aorta, of this woman, had ſent off no more than two branches upwards; but how many years ſhe liv'd, what health ſhe enjoy'd, and of what diſeaſe ſhe died, is not added.

16. But leaving an appearance which, any where elſe but in the heart, where nature is generally found to be ſo ſimilar to herſelf, would not have deſerv'd any great attention, I return to the conſideration of the hernia, which though very ſmall, was nevertheleſs fatal. And, indeed, in proportion as herniæ are neglected by patients, on account of their ſmallneſs, ſo much the more dangerous do they often, at length, become, as that was, the ſacculus of which "would ſcarcely admit the extremity of the fore finger (*y*)." For the inteſtine is more eaſily conglutinated with a ſmall ſacculus, and more cloſely conſtring'd thereby. And to this muſt be added, the ſilence of the patients upon this head, by reaſon of the neglected ſmallneſs of the hernia, even when they begin to be tortur'd with pains of the belly; ſo that the celebrated Werlhof (*z*) prudently admoniſhes all medical practitioners, "not to "omit, in all colic diſorders, to inquire into herniæ, which are often even "very ſmall, and overlook'd by the patients themſelves, or conceal'd through "ſhame;" and he relates, that to him, at leaſt, it had happen'd more than once, that notwithſtanding he had made the inquiry again, and again, the patients denied it, almoſt quite to the laſt.

It happen'd to me, alſo, in the caſe of a young man, who was equally learned, noble, and pious, and who is now a very eminent man, that when by other phyſicians, and by me likewiſe, it was much inquir'd, what could be

(*u*) Hiſt. de l'Acad. r. des ſc. a. 1741. obſ. anat. 7.

(*x*) Differt. qua Sylloge anat. obſ. &c. §. 47.

(*y*) Vid. act. lipſ. ſuppl. t. 1. f. 12. in relat. libelli launay.

(*z*) Commerc. littr. a. 1735. hebd. 1. n. 3.

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the cauſe of pains in the belly, that return'd every now and then, and the more we inquir'd, the leſs were we likely to find it out; it happen'd, I ſay, that from this very abſence of all other cauſes, I ſuſpected the preſence of that cauſe whereof we now ſpeak. And that this ſuſpicion was not groundleſs, I found out by inquiring whether he receiv'd any advantage from a ſupine ſituation of body. For as the patient anſwer'd in the affirmative, and as a little tumour was ſoon after found which he himſelf, by reaſon of its ſmallneſs, had not in the leaſt obſerv'd, the inteſtine was replac'd ſoon after, and kept up by a proper bandage, ſo that the pains return'd no more. But theſe pains had been rather troubleſome, than violent. And that colic pains, as I had begun to obſerve, are often brought on by herniæ, is not only ſhown by frequent experience, but confirm'd by the diſſection of a woman, given by the celebrated Weiſſius *(a)*, who had been often troubled with colic pains, on account of a hernia, in the ſame place, where I have ſaid our patient had one, and not only containing a portion of the colon, but a portion of the ileum, and omentum alſo; the gall-bladder being, likewiſe, loaded with a greater number of calculi, than it was in the woman deſcrib'd by me.

The hernia of this woman may be call'd rare, as Littre ſays (*b*), if it be compar'd with thoſe very frequent herniæ, that are made up of the ſmall inteſtines. He deſcribes one, in a noble-woman, ſimilar to this of ours, whether you conſider what he found in diſſecting the dead body, or the power of diſcharging ſome excrements, which he had obſerv'd in the living body. Only the ſeat of it was higher. Another is taken notice of by Palfin (*c*), who ſeems not to have read that of Littre, I ſay that of the year 1714. But he had read the obſervation of Hildanus (*d*), which, when the author himſelf had accurately conſider'd it, he had explain'd in the ſame manner as Littre (*e*): and I even find that Bienaiſius had thus explain'd another, which he met with at Paris alſo, in the year 1671, as J. H. Lavaterus, who was preſent, publiſh'd in the following year *(f)*. For the reaſon why a female patient, labouring under a bubonocele, " had diſcharg'd liquid excrements from the " inteſtines, through the whole time of the compreſſion (quite to the ſeventh " day) was found by the operator," ſays he, by whom he means the gentleman I juſt now mention'd, " to be, that the inteſtine was, in part only, con- " ſtricted."

But I have even remark'd of Ballonius, when ſaying *(g)*, " that when the " apophyſis of the inteſtinum cæcum is prolaps'd into the groin," notwithſtanding it may become putrid, " it is not neceſſary that thoſe ſymptoms " ſhould, of courſe, follow, which are generally the conſequences, in a ſimi- " lar affection of the other inteſtines, whether ſmall, or large;" I have remark'd, I ſay, that when he ſays theſe things, he has pretty clearly hinted that if a prolaps'd part, either of the ſmall, or of the large inteſtines, ſimilar to that appendix, be intercepted in a hernia, the patient may have ſome diſcharges by ſtool, contrary to what happens when the whole tube of any inteſtine is intercepted. And it is certain that there are ſome other appen-

(*a*) Commerc. cit. a. 1745. hebd. 24. n. 1.
(*b*) Mem. de l'Acad. r. des ſc. a. 1714.
(*c*) Anat. du corps hum. tr. 1. ch. 8.
(*d*) Cent. 1. obſ. chir. 55.
(*e*) Cent. 6. in obſ. 71.
(*f*) Diſſ. de inteſtinor. compreſſ. theſ. 6.
(*g*) L. 1. conſil. med. 103.

dages now and then, beſides that natural one, which are alſo call'd diverticula, and that they enter the hernical ſacculus, whether they are gradually and preternaturally produc'd, or are given to ſome bodies from their firſt origin. For I would have you be cautious of ſuppoſing that they are all preternatural, and eſpecially that they were all form'd from the ſide of the inteſtine being prolaps'd into the hernial ſacculus; for ſometimes, as will be ſaid below (*b*), they belong to thoſe inteſtines which are not ſituated in the places where herniæ happen.

Wherefore, you will, without doubt, be of opinion with Littre (*i*), and Mery (*k*), that thoſe appendages, which they ſaw, were form'd in that manner, or at leaſt increas'd: and if you alſo chooſe to ſuppoſe, that thoſe three which were ſeen by Schrockius (*l*), in a young man, who had been often troubled with pains in his belly, but not from herniæ, which were no where found, took their origin, or increaſe, from ſome morbid cauſe, I ſhall, perhaps, not very violently oppoſe your opinion. But if you ſhould aſſert that ſome others, as, for inſtance, that which is deſcrib'd by Weitbrecht (*m*), in a woman, which was furniſh'd with conſpicuous fibres, in the ſame manner as the other inteſtines, did not exiſt from the firſt formation of the body, I certainly ſhall not be able to aſſent to your aſſertion.

For I do not doubt but this was of the ſame kind with that which I found in an old woman, inaſmuch as that had the ſame ſubſtance, and thickneſs, of parietes, with the other inteſtines, and hung perpendicularly from the ileum, where it was nearer to the colon, than to the jejunum: and this I would have you add to my very ſhort deſcription in the Adverſaria (*n*), ſince Hunauld (*o*), when deſcribing another which had been ſeen by him, has deſir'd that this ſhould not be paſs'd over. And perhaps that was nearly of the ſame kind, which I ſaw in the woolcomber (*p*), though it differ'd from the former in theſe circumſtances, that it was ſhorter, and hemiſpherical, in its figure, and plac'd contrary to the inſertion of the meſentery, where the ileum was ſo reflected, as to make an angle, which continu'd even when the meſentery was cut off; for in that the very prominence of the angle was protuberant, much in the ſame manner, if you conſider the ſituation only, as that which is delineated by Ruyſch, in the Muſæum Anatomicum (*q*). Thoſe which I have ſeen beſides, I have not a deſcription of, and indeed have ſeen but very few, though I have examin'd the inteſtines of ſo many bodies.

17. And from hence it is, that the more I conſider, the more I ſuppoſe that the words of Ruyſch, in the ſeventh Theſaurus (*r*), "diverticula of this kind "are generally, if not always, to be met with in the ileum," are to be taken in a different ſenſe from what they ſeem at firſt to convey; I mean, in fact, that when they are really found, they are generally found in this inteſtine. At leaſt in this inteſtine they have been ſeen, by thoſe who are mention'd by

(*b*) N. 17.
(*i*) Mem. de l'acad. r. des ſc. a. 1700.
(*k*) Mem. a. 1701. obſ. 1.
(*l*) Eph. n. c. cent. 8. obſ. 50.
(*m*) Comment. acad. imp. petropol. t. 4.
(*n*) III. animad. 5.
(*o*) Hiſt. de l'acad. r. des ſc. a. 1732. obſ. anat. 2.
(*p*) De quo epiſt. 36. n. 22.
(*q*) Fig. 3. ad thec. c. repoſ. 3. n. II.
(*r*) N. XV. 3.

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me at preſent, or have been mention'd before (*s*), and beſides theſe by Henricus Meibomius (*t*) formerly, and after that by others, and among the reſt by thoſe very experienc'd men, Waltherus (*u*), Schlitingius (*x*), and lately by the celebrated Bonazoli (*y*); to ſay but little of myſelf, who nevertheleſs, not to omit this circumſtance that relates to my own obſervations, very well remember that the bodies, in which I ſaw theſe appearances, had not been thoſe of maniacal perſons, nor do I ever remember to have ſeen them, in the bodies of maniacs, that I have happen'd to diſſect. I have alſo ſeen the ſame appearance, more than once, in geeſe, and particularly in one of ſuch a breadth, that it could not be taken for the remains of that duct, which had formerly belonged to the vitellum. And in theſe creatures, likewiſe, it communicated with that inteſtine, which anſwers to the ileum, and even with the part of it, that is neareſt to the large inteſtine; which I ſee has happen'd in the human body, both to me, and to others, who have expreſsly told us, to what part of the ileum, they were connected.

From hence a confirmation may be taken, of the cauſe pointed out by the celebrated Fabricius (*z*), why morbid appendages happen chiefly in the ileum. For if the inteſtinal contents, which deſcend to the ileum, from the parts above, by reaſon of the greateſt part of the chyle being already taken up into the lacteal veſſels, begin to acquire ſo "very thick a conſiſtence," as to urge the thin coats, and diſtend them; this conſiſtence will certainly be thicker and thicker, the greater progreſs theſe contents ſhall have made, through the ileum, as, by this means, they will have parted with ſtill more chyle, or any other fluid that was mix'd with them. Wherefore the diverticulum, alſo, which he ſaw, was not more than two ſpans diſtant from the extremity of the ileum. What then, you will perhaps ſay, are we to underſtand Ruyſch ſo as to ſuppoſe, that theſe diverticula are ſometimes to be met with in other inteſtines, in like manner? Without doubt: for when I read over my obſervations, I cannot help believing that it happen'd to him, ſometimes, much as it happen'd to me, when I ſaw an appearance of this kind, once in the rectum, and again in the duodenum. This appearance in the rectum, I have deſcrib'd in the Adverſaria (*a*); and it was in the body of an apoplectic man, that I ſaw a diverticulum connected to the duodenum, almoſt two inches below the pylorus, which was a kind of cellule not very protuberating, but big enough, in its orifice, to admit a finger, ſurrounded with no coat, but the external one of the inteſtine, yet having not the leaſt traces of any preſent, or paſt, ulceration in that part, as indeed there were not in the ſtomach, or the whole inteſtinal tube.

But as theſe diverticula, when they do exiſt, are chiefly to be met with in the ileum, as I have ſaid, which is the longeſt of all the inteſtines, and plac'd in that part where herniæ do moſt frequently happen, it is not to be wonder'd at, if they enter into herniæ chiefly from the ileum.

And then Ruyſch thought it might happen that no ſymptoms of a hernia ſhould follow (*b*). And Littre (*c*) had, before, expreſsly taught, that all the

(*s*) Adverſ. III. animad. 5.
(*t*) Epiſt. de vaſ. palpebr.
(*u*) Progr. de aneur.
(*x*) Act. n. c. t. 6. obſ. 20.
(*y*) Comment. de bonon. ſc. acad. t. 2. p. 1. inter anatom.
(*z*) Progr. helmſtadt. editum janu. 1750.
(*a*) Animad. cit. 5. in fin.
(*b*) N. 3. cit.
(*c*) Mem. de l'acad. r. des ſc. a. 1700.

ſypmtoms of herniæ, of this kind, proceed more ſlowly, and are leſs violent, than in other herniæ, where the whole tube of the inteſtine is ſtrangulated, and that they are particularly diſtinguiſh'd by this circumſtance, that a diſcharge of the fæces is never impeded. And he adds other things, in which are theſe alſo, that the abdomen is neither tumid, nor tenſe, nor fill'd with flatus, as in common herniæ. Which circumſtances, although they ſeem to be agreeable to reaſon, on account of the paſſage through the inteſtines being then free, and are very properly confirm'd, by the approbation of Palfin *(d)*, and of others, are nevertheleſs not always to be depended upon, as indeed no maxim, whatever, in medicine is ſo well ſettled, but it may ſometimes miſlead us; and in order to evince this, I will, here, add an obſervation of my own, which I have indeed, already, juſt hinted at in the Adverſaria *(e)*, but not wholly deſcrib'd; for from this it will appear, how very different the caſe was with a patient, in whoſe hernia a part of the inteſtine was ſo intercepted, as ſtill to have an open paſſage left through it.

18. A porter of Bologna, who was ſo far broken down by continual labours, and fatigues, that when he was in his fiftieth year, he appear'd much older, had a hernia in his right groin, of the bigneſs of a man's thumb, which ſometimes ſeem'd to be remov'd. This man, about the middle of March, in the year 1706, without any previous cauſe, except perhaps that a ſnowy day had come on, all of a ſudden, after very temperate weather, was ſeiz'd with a pain of the belly, which was vague indeed, but very ſevere, and, as his own expreſſion was, juſt as if he were gnaw'd by dogs. And this pain, although it ſeem'd to have grown much milder, by applying I know not what kind of ointment to the belly, yet ſoon after grew more violent than ever, and was never afterwards diminiſh'd. As the man was brought into the hoſpital of St. Mary de Morte at Bologna, when the diſeaſe had already continu'd ſix days, his fleſh was almoſt cold, his pulſe was very frequent, but ſtill ſmall, and gave little reſiſtance to the fingers which preſs'd it, and ſtruck them with an unequal force of percuſſions, his whole abdomen being diſtended like a drum, but more below the right hypochondrium, where ſome cells as it were of the inteſtinum colon ſeem'd to be felt with the hand, and the hernia being become much harden'd in its ſubſtance, although he denied that this was the principal ſeat of the pain. He threw up his food. For four days he had diſcharg'd no fæces at all, from his inteſtines. It was even in vain that he endeavour'd to diſcharge the flatus itſelf.

Freſh drawn oil of almonds was given him; and linſeed oil thrown up by way of glyſter to the quantity of ten ounces. The latter return'd juſt as it went up, and the former he threw up from his ſtomach, and complain'd that he was diſturb'd, and agitated thereby. Being aſk'd what taſte he had in his mouth, he anſwer'd that of poiſon. He was very thirſty. His vomiting continu'd. On each of the following days, that is on the ſeventh, and the eighth, a glyſter was thrown up, the firſt compounded of the *benedicta laxativa* and other ingredients, and the ſecond of milk and the white of an egg; but they were of no more uſe than the former. As no excrement at all was diſ-

(*d*) C. cit. ſupra ad n. 17. (*e*) Animad. ibid. cit.

charg'd,

charg'd, and the other ſymptoms, which I have deſcrib'd, continu'd, and the pulſe, although after the ſixth day it was no more unequal, became more weak, and ſmaller, ſo that on the ninth day we could hardly feel it at all, and as the ſkin was now corrugated, the body cold, and the patient unable to lift up his eye-lids, and almoſt to ſpeak, notwithſtanding he beg'd for wine, he ſank by degrees, and, at length, on the night following, died in a very placid manner.

The body, which had a ſqualid appearance, the ſkin being rigid and not without ſome ſcabies, I diſſected on the following night. When the abdomen was open'd, a ſmell came forth like that which generally proceeds from gangrenous parts. The omentum was extended quite into the hernia, and entirely red from inflammation, except ſome broad lines, as it were, which were drawn in a tranſverſe direction. The ſpleen was, in ſome part of it, infected with a morbid livor, which was alſo carried to the internal part, although to a very inconſiderable depth. The ſtomach ſtretch'd itſelf much more to the right ſide, than it uſually does, being univerſally diſtended with a yellowiſh matter, that reſembled nothing more, than a fluid excrement, with which the ſmall inteſtines, from the ſtomach quite to the hernia, were alſo diſtended, to a very great degree. For whatever us'd to be carried from the ileum to the large inteſtines, remain'd there, and was collected in great quantity; and the large inteſtines were all very much contracted, and white, ſo as to make it manifeſt, that nothing had paſs'd through this part of the ileum which belong'd to the hernia; although the tube of the inteſtine, itſelf, did not enter the orifice of the ſacculus, but paſſing by the ſide of it, ſent no other part of itſelf into that cavity, but a portion of its paries, relax'd into the form of a ſemioval cavity.

The largeſt axis of this cavity, where it began gradually from the inteſtine was about three inches, according to the length of the inteſtine; and the leaſt axis was much ſhorter, inaſmuch as it extended itſelf through the anterior ſurface of the inteſtine, at the interval of a ſmall inch from the inſertion of the meſentery, to the inferior ſurface. From theſe beginnings, the cavity was more and more contracted by degrees, as the ſemioval figure requires, till it deſcended to the depth of a large inch in the middle. This part therefore, whether you chooſe rather to call it a cavity, or a diverticulum, was the only part of the inteſtine, intercepted by the hernia, together with the extreme part of the omentum, which was included with it, ſo that the remainder of the inteſtinal tube was not at all compreſs'd thereby. But neither of theſe parts could be drawn up from the hernia, as they were not only confin'd by the nervous orifice, as it were, of the ſacculus, but even connected to the ſacculus, by a kind of fibrous junction, that was not very ſtrong, indeed, but very frequent; and the ſacculus, in the part where theſe connections were, was ſomewhat rough, but in other parts ſmooth. This ſacculus was made up of the peritonæum, relax'd towards the external ſurface of the body, and carry'd out near the external ſide of the ſpermatic veſſels: and on one ſide, and on the other, of the hernia, were two tumid inguinal glands, one of which being very near to the ſacculus, had its ſubſtance in part white. The inteſtine, in that part which was neareſt to the ſacculus, and ſtill more the diverticulum of that inteſtine, was of a red colour degenerating

ing into black. And the inteſtine from thence upwards (for below, as I have ſaid, it was white, for a conſiderable extent) was of a red colour, inclining to livid: but the whole of the tube, from this tract quite to the ſtomach, was quite red, by reaſon of the great number of blood veſſels, which were crowded together in moſt places. And the meſentery was of the ſame colour.

I choſe alſo to open the thorax. The lungs adher'd every where, except on the right, and arterior ſurface, to the pleura, and particularly at the ſides, and back, where this membrane was much thicken'd, but no where more, than at the upper part of the thorax, on the right ſide, where the ſubſtance of the lungs was extremely hard, as if from an old diſeaſe; and in the inferior part, and on the right ſide, likewiſe, it was conſiderably more compact than it generally is. However, the lungs abounded with moiſture, almoſt in every part.

In the pericardium was no water, but the heart was flaccid, and contain'd polypous concretions, in each of its orifices, as it did in the right ventricle alſo, and the left auricle, all of them being moderately condens'd, and moſt of them of a ſmall ſize: for that was the ſmalleſt which lay in this auricle; and that was the longeſt which reach'd into the pulmonary artery, and its branches.

19. I do not doubt but you will naturally enquire of me, why, notwithſtanding the paſſage remain'd open through the inteſtine ileum, yet nothing paſs'd through it. I confeſs I can ſuſpect many cauſes, but can affirm none for certain. The inteſtine was, in that part, exceedingly injur'd by inflammation, and at the ſame time irritated, on account of a portion of itſelf having ſuffer'd diſtraction, and interception. Did the periſtaltic motion, therefore, by which the contents were puſh'd on, ceaſe in that place? Or was there ſome convulſion, by which, that part of the tube was contracted, in the living, more than in the dead body? Or finally, did inflammation cauſe this contraction, by rendering the veſſels, and the parietes, more turgid, while life remain'd, which after death were relax'd? At leaſt Littre *(f)* hints at ſomething, which relates to this third cauſe, when he conjectures why by that noble woman, whoſe hernia took in a portion of the colon, ſometimes frequent, and large, diſcharges were made from the inteſtines, and at other times leſs large and leſs frequent. Nor would I have you make it an objection, that in this woman, although the inteſtine w. ; inflam'd, and a portion of it intercepted, more or leſs of the contain'd matter could always be carried through it, as in that woman, alſo, whoſe hiſtory I gave you under number fifteen.

For to omit, that in different perſons there may be a different degree of injury, a different degree of power, in the inteſtines, and a different degree of ſenſibility; it is certain that in theſe women the queſtion is of the colon, and in this man of the ileum, which, not to inquire whether it has more acute ſenſations, is at leaſt more narrow, in many parts, than the colon; ſo that if even a larger portion, according to the breadth, of the latter than of the former, be intercepted, a more open paſſage will remain in the colon, and

(f) Vid. ſupra n. 16.

a larger

a larger extenſion of the parietes, in which the power of puſhing forwards the contents conſiſts, and with theſe alſo will remain thoſe three ligaments, that is to ſay, thoſe three muſcular bands, which it is ſo much the leſs probable ſhould be intercepted within herniæ of this kind, as it is the more difficult for the paries of the colon to be relaxed, in a part where it is fortified externally with one of them: and this external ſituation, and more compact ſubſtance of the faſciæ, or bands, may alſo have this effect; to prevent them from contracting a diſorder ſo eaſily. And from theſe conſiderations you will perceive, not only why the diagnoſis of herniæ of this kind, propos'd by Littre, may anſwer much better in the colon than in the ileum; but alſo why it will anſwer better in the ileum itſelf, where the orifice of the diverticulum is pretty narrow, ſuch as it is deſcrib'd (*g*) by the ſame author, not when it is ſo large as my deſcription ſhows it to have been in the porter. I ſay anſwer better; for I dare not take upon me to ſay that where the orifice is thus narrow it will always, nevertheleſs, anſwer.

And theſe things you know I had written to you, when I receiv'd a book that was ſent to me by the celebrated Benevoli (*h*), wherein he deſcribes in the ſecond place, a hernia made up, as was confirm'd by the diſſection of the body, of an appendix of the ileum, extending itſelf into the ſcrotum. Which, although it communicated with this inteſtine, by an orifice that, in the dead body, was not larger than to equal the diameter of a ſmall filbert; yet the patient had, for the firſt fifteen days of the diſeaſe, which was very violent, thrown up every thing he took in, by vomiting, and diſcharg'd nothing by ſtool, and had thrown up, very early in the diſeaſe, a matter like the fæces. Beſides, the inteſtinum ileum, in the part which correſponded to the hernia, was, for ſome conſiderable length, of a colour that was not quite natural, and was very much corrugated and contracted; from whence it was eaſy to conjecture, that the inteſtine, being violently drawn down by the diſtended, and inflam'd, appendix, was, from this cauſe, attack'd with inflammation, depreſs'd, and convuls'd.

I would have you join this hiſtory with the hiſtory that I have given of the porter; and the conjectures which depend upon what was remark'd in the diſſection, I would have you join to thoſe things which I ſuſpected, in regard to the cauſes why the diagnoſis of herniæ, of this kind, which is given by Littre, may ſometimes not anſwer. But if not only the appendix, but the ileum itſelf alſo, be intercepted within the hernia, and vitiated by an inflammation, and gangrene, as in the obſervation of Mery (*i*); it is evident that a diſcharge by ſtool is then prevented, and that the other circumſtances happen, which are wont to happen in affections of the ileum of that kind: are wont, I ſay; for although theſe things happen to moſt patients in this caſe, there are ſome, in whom neither the bowels are quite lock'd up, nor are there vomitings of the excrements, or matter ſimilar thereto, as, for inſtance, in thoſe whom the celebrated men Wolf (*k*), and Cohauſen (*l*), have deſcrib'd; ſo that there is leſs reaſon to be ſurpriz'd, that it did not happen

(*g*) Mem. de l'a. 1700.
(*h*) Due Relaz. chirurg.
(*i*) Cit. ſupra ad n. 16.
(*k*) Act. n. c. tom. 4. obſ. 68.
(*l*) Commerc. litter. a. 1742. hebd. 26. n. II. ad. 3.

otherwiſe, to thoſe whoſe diſeaſes and diſſections are related by the celebrated Storch (*m*), and Bajerus (*n*), whereas a part of the colon was intercepted in the hernia, and not of the ileum, which however was, univerſally, together with a large tract of the ileum, affected with that inflammation, from which the colon was free.

20. Having thus produc'd, and pointed out, the obſervations in which the pains of the inteſtines aroſe from a cauſe that fell under the notice of the eye, I go on to thoſe in which the cauſe lay entirely hid within the body. And I will begin with thoſe, that, by reaſon of the vomiting, and inflammation, come nearer to theſe which I have already deſcrib'd. The two firſt are from the papers of Valſalva.

21. A ſlender man, of fifty years of age, began, after many fatigues in hunting, to complain of a great heat at his throat and cheſt. This heat, deſerting thoſe parts, diſcover'd itſelf in the loins, and in the belly, in like manner, where being join'd with a punctorious pain, it ſo troubled the patient, that he could not bear the parts to be touch'd. On the firſt days the man was frequently ſeiz'd with a cold rigor. But five or ſix days before death, a volvulus came on, with a throwing up of the fæces by vomiting: and this, by gradually wearing out the ſtrength of the patient, brought him to the final cloſe of life, about the thirtieth day after being confin'd to his bed.

The belly was found to be univerſally fill'd with ſanies, which had connected the omentum, and the inteſtines, to each other. The left kidney contain'd extravaſated blood, under the internal membrane, but not in every part. In the omentum, and on the edge of the meſentery, particularly where it was connected with the colon, were obſerv'd many ſmall abſceſſes and ulcers.

22. When the abſceſſes firſt began to be form'd, not only the belly was affected with diſagreeable ſymptoms, but the loins alſo, to which the meſentery is connected. The time of their coming to ſuppuration is pointed out by thoſe frequent cold rigors. And the ſanies being extravaſated, left ulcers in theſe parts, and filled the abdominal cavity. Which there growing more and more acrid, by ſtagnation, irritated the coats of theviſcera, and of the inteſtines in particular; and by this means an inflammation of all the viſcera was brought on, and the motion of the inteſtines beſides was inverted. Hence the volvulus.

You may compare this obſervation with thoſe of the celebrated Mauchart (*o*), and Verdrieſius (*p*), not on account of the volvulus, which ſeems to be but juſt hinted at in one, but by reaſon of the pains of the belly, eſpecially as in both of them were abſceſſes of the meſentery, in like manner, in one open, ſo that the belly was fill'd with ſanies, in the other not open'd, and the inteſtines which were, here and there, infected with a ſphacelus, coher'd cloſely one with another, and with the omentum.

23. Another man, of the ſame age with the former, and of the ſame habit of body, but of a pallid colour, having been ſeiz'd, two years before, with an ardent fever, was at length freed from it without any perceptible traces

(*m*) Act. cit. t. 7. obſ. 101.
(*n*) Com. cit. a. 1745. hebd. 40. n. 2.
(*o*) Eph. n. c. cent. 1. obſ. 14.
(*p*) Act. cit. tom. 1. obſ. 87.

of

of a criſis; and was afterwards affected with a great thirſt, a very great weakneſs of the head, and ſtomach, and a defect of the ſtrength. Being every day troubled with theſe ſymptoms, he was ſeiz'd with a great oppreſſion of the heart, which, in the night when he was about to fall into a ſleep, was ſucceeded by a tremor of the whole body. He was thought, by other phyſicians, to labour under a conſumption, but by Valſalva, to have a redundancy of water in the cranium, who alſo preſcrib'd ſuch remedies as are generally made uſe of in hydropic caſes. But the patient, in the mean while, drinking a great quantity of new wine, with his bottle companions, was ſeiz'd with a great pain in his belly, which was unfix'd however, but join'd with flatus, with a vomiting of bilious matter, and with a celerity of the pulſe. The next day in the morning, as the pain was not only more violent, but fix'd in a certain part, which was exceedingly painful when touch'd, Valſalva, fearing inflammation, order'd a vein to be open'd. Yet all remedies were to no purpoſe, and the patient died in the beginning of the fourth day.

In the belly every thing was found to be in a ſound ſtate, except the inteſtinum ileum, which was, in a great part of it, inflam'd.

In the thorax was nothing particular to be obſerv'd, except a very large polypous concretion in the right ventricle of the heart, which was produc'd from thence into the vena cava. Within the cranium was found a great quantity of ſerum, with which the ventricles of the brain were alſo fill'd. The glandules of the plexus choroides were very large, and abounded with a great quantity of ſerum: and the compages of the brain was lax.

24. How dangerous it is for conſiderable fevers to be ſolv'd without any criſis, is confirm'd by the firſt part of this hiſtory. And how juſt both the opinions of Valſalva were, is demonſtrated by the appearances found in the head and in the belly. But as to there being only a vomiting in this patient, and not a volvulus, as in the former, you will not inquire into the cauſes thereof, when you have compar'd the diſſection of this body with that of the former, or of the following: which, if I remember rightly, was made by me, in the hoſpital of incurables at Bologna, in the year 1705.

25. An old man of ſeventy four years of age, of a ſlender habit, and given to wine, had begun, for a month paſt, to walk in ſuch a manner, as to bear chiefly on his left leg. Which his domeſtics had obſerv'd more than himſelf; at leaſt he ſaid nothing of it, nor complain'd of pain in any part. Two and twenty days after he was ſeiz'd with a wandring pain in his belly, join'd with no fever, which he, without conſulting any one, expell'd by taking theriaca. But after twelve days had paſs'd over, he was ſeiz'd, about noon, with a pain in the upper part of the iliac region, on the right ſide, which was very oppreſſive, and as he himſelf ſaid, like that which would be caus'd by the gnawing of dogs. The pain'd part was ſwollen, but had not chang'd its colour, and if you touch'd it was ſoft: but preſſing your hand down pretty low, you perceiv'd a hardneſs. The pulſe, though in other reſpects good, was quick and frequent. His eyes were ſunk into their orbits. His tongue was dry. He paſs'd a bad night.

On the ſecond day of the diſeaſe his pulſe was very large, and vibrating. The pain and the tumour extended themſelves to the middle of the belly,

and at length were continued towards the left ſide. Blood being taken away from his right arm, to the quantity of ſeven ounces, had no ſerum in it; but had a yellow and thick cruſt. He had a nauſea to a conſiderable degree, but not ſo as to cauſe his food to be thrown up from his ſtomach. He went to ſtool freely and without any uneaſineſs. The ſecond night was extremely bad.

On the third day his pulſe was low: he had frequent eructations, which were bitter, and acid: his ſpeech was vitiated as if by a convulſion: he was delirious at times, as was demonſtrated by the childiſh, and trifling things, which the patient related.

On the fourth day his limbs were every now and then convuls'd, and the whole body remain'd rigid for a quarter of an hour: during this convulſion and rigidity there was no pulſe: and, on the contrary, when the convulſion and rigidity were gone off, the pulſe alſo return'd, and was much like that of a healthy perſon, except that it was low, and when preſs'd upon by the fingers gave no reſiſtance. Reſpiration becoming very difficult after that, although the tongue was now moiſt, and the patient was no more delirious, he threw up the fæces by vomiting, and a little after, which was in the evening of the ſame day, he died convuls'd.

The abdomen being open'd, the left lobe of the liver was found to be lax, and univerſally affected with a ſphacelus. The ſtomach and the inteſtines, eſpecially the ſmall inteſtines, were in ſome places red, in ſome livid, and in others black. But the beginning of the colon, where it lay contiguous to the muſcles, which cover the hollow ſurface of the os ilium, together with theſe muſcles, was univerſally affected with a gangrene, and ſo connected to them that it could not be ſeparated without laceration. From thence the livid ſerum, mix'd with pus, which had been ſeen in the cavity of the belly, ſeem'd to have been extravaſated, as a matter ſimilar to it was contain'd in the inteſtines.

26. As to the beginning of this hiſtory, it is not very abſurd to ſuppoſe, that ſome diſorder had been, gradually, generated in thoſe muſcles, which I juſt now ſpoke of, from whence the neighbouring crural nerves were compreſs'd, and to ſuppoſe it to have happen'd from hence, that the patient, when he walk'd, bore chiefly upon his left leg. As to the diſorder itſelf, inflammation and putrefaction afterwards coming on, the deprav'd and corrupted juices ſo vellicated thoſe nerves, as to cauſe a convulſion of the whole body. And it is probable, that in a boy who was carried off by the iliac paſſion, the convulſions of the whole body are not to be aſcrib'd to any other cauſe, than to that of a putrid matter flowing from the inteſtines, with which the ſame muſcles were bedew'd: for theſe convulſions affected the lower limbs in particular, and were, as you read in this fourteenth ſection of the Sepulchretum *(q)*, ſo obſtinate, that the boy at length died convuls'd.

But in what manner the inflammation, in this old man, crept into the contiguous inteſtine, and other circumſtances that I have deſcrib'd, there is no occaſion to explain. I go on therefore, to an obſervation, which that part of the colon, being inflam'd, recalls to my mind, and which was com-

(*q*) Obſ. 21. in additam.

municated

municated to me, two years before I made the preceding, by that very learned and humane man M. Anthony Laurentio, who is, at preſent, one of the pontifical archiaters.

27. A woman, who had had a fall on her back a year before, having been lately afflicted, for ſome days, with a very great, deep ſeated, and excruciating pain in her belly, join'd with vomitings, was taken off thereby.

Her ſtomach was found to be ſurprizingly contracted; and the cæcum inteſtinum of the ancients ſo dilated, by yellow, and ſemifluid fæces, that it reſembled the ſtomach. This inteſtine had been ſeiz'd by an inflammation, which alſo began to diffuſe itſelf through the neighbouring viſcera.

28. If that fall had any reference to the cauſes, which gave riſe to this diſeaſe of the woman, it is to be ſuppos'd that ſhe had fall'n upon her back in ſuch a manner, as to hurt the right ſide of her belly and that part of the colon which lay in this ſide. And that this part of the inteſtine having, for that reaſon, the power, by which it propels the fæces upwards, more and more diminiſh'd every day, was, at length, expanded by the ſtagnation of its contents, in the manner I have deſcrib'd, particularly with the cæcum that was ſubjoin'd to it, and that, on account of the diſtraction of its coats, it was affected with a very ſevere pain, and by reaſon of the compreſſion of the veſſels inflam'd. And if the woman had dragg'd on her life a little longer, perhaps ſhe, alſo, would, like ſome of thoſe of whom I have already ſpoken above, have vomited up excrements in a filthy and miſerable manner, or rather ſomewhat extremely like excrement. For many being deceiv'd by this ſimilarity, have ſuppos'd that what had already paſs'd into the large inteſtines, was thrown up by vomiting in a volvulus, which muſt happen much more rarely than they imagine, by reaſon of the valvula Bauhini being interpos'd, and this is alſo ſhown by other circumſtances, which are taken notice of by me in the Adverſaria (*r*).

That they have really been deceiv'd by this ſimilitude, it is not difficult to demonſtrate, by producing many obſervations of vomitings of that kind, even in thoſe bodies, wherein the paſſage from the large inteſtines to the mouth was entirely ſhut up. For, to omit others, where this paſſage was intercepted by a very cloſely confin'd hernia, or by an obſtruction, or coalition, of the tube, turn, by way of example, to that obſervation of Henricus ab Heers in the Sepulchretum (*s*). A mountebank had tied up the inteſtinum ileum of a boy, who had a rupture, together with the omentum, with a piece of iron wire, ſo that nothing at all could paſs through. And the boy died, as the obſervation ſays, "throwing up his excrements by his "mouth." Add to this, the ſeveral experiments of the celebrated Haguenot (*t*), upon cats and dogs: which vomited up excrements, to appearance, though a firm ligature was put upon the ſame inteſtine. Who would not, at firſt, have imagin'd, that theſe fæces were carried back from the large inteſtines, if he had not known that the ſmall inteſtines were quite ſhut up.

For without doubt, thoſe ingeſta which are carried down from the ſtomach to the inteſtines, being mix'd with the juices of the ſtomach, and ſoon

(*r*) III animad. 9.
(*s*) Obſ. 24. §. 3.
(*t*) Mem. de l'acad. r. des ſc. a. 1713.

after

after with the juices of the inteſtines, with the ſuccus pancreaticus, and the bile, and having had many of their finer parts carried off into the lacteal veſſels, are under a neceſſity of making that delay in the ſmall inteſtines, when their paſſage is obſtructed, which they naturally would have made in the large, and even a greater delay when theſe ſmall inteſtines are inflam'd; ſo that they will of courſe contract the ſame putrefying odour in the ſmall inteſtines, that they us'd to contract in the large, and may be call'd excrement without any impropriety, as is aſſerted by Piccolhominus *(u)*, who, for this reaſon, denies that it is neceſſary for the remains of the ingeſta, after the chyle is taken up, to reach the large inteſtines, in order to acquire the nature of excrement. But although they are not deceiv'd in this, they are, nevertheleſs, from hence carried into an error, when they ſuppoſe this fæcal matter to come from the large inteſtines, which comes in fact from the ſmall.

29. But that the fæces may be carried back quite from the large inteſtines, is demonſtrated by ſuppoſitories and glyſters being thrown up by the mouth, in patients who labour under the iliac paſſion. I ſeem however to have ſaid, ſufficiently, what I think of ſuppoſitories, and of glyſters likewiſe, in the Adverſaria *(x)*. But as I have ſince read, in the writings of a conſiderable author, that this happens "frequently," and in thoſe of another, have ſeen this circumſtance explain'd, without ſuppoſing an inverted motion of the inteſtines, in a method entirely new; I have determin'd to add ſome few things, in this place, upon both of theſe heads. And in regard to the firſt, Galen has not only taught us, in more than one part of his works *(y)*, that the motion of the inteſtines is inverted, in an iliac paſſion, and even without it, but alſo in the third book *de ſymptom. cauſis (z)* has aſſerted once and again, "that ſome perſons have had part of the glyſters, that have been injected, "carried into the ſtomach, ſo as to be thrown up by vomiting: and beſides, "that excrement was frequently thrown up, in iliac paſſions, that prove "mortal."

But from his time, quite down to the time of Jo. Mathæus de Grado *(a)*, that is from the ſecond age of the chriſtian æra, to the fifteenth, I do not remember to have read any one who confirms it. After him, and in the ſixteenth century, was one, that is Julius Alexandrinus *(b)*, who ſays that he had ſeen it, "not very often, but ſometimes," as Francus Hildeſius has ſaid he did twice *(c)*. But in the laſt age, and in this, a great number indeed have aſſerted it. For you may read three obſervations of Abel Roſcius *(d)*, of Daniel Sennertus *(e)*, as it appears to be, of John Henry Lavaterus *(f)*, of Luke Schrockius the elder *(g)*, and of John Mery *(h)*, each one, and many from the compilers of the Bibliotheca Anatomica *(i)*: and beſides,

(*u*) L. 2. anat. prælect. 11.
(*x*) Animad. cit.
(*y*) De nat. facultat. l. 3. c. 13. & in Hipp. de vict. in acut. comm. 3. n. 33.
(*z*) C. 2.
(*a*) Apud donat. de hiſt. mirab. l. 4. c. 3.
(*b*) Apud Schenck. obſ. med. l. 3. ſub. tit. variar. rer. vomit.
(*c*) Ibid.
(*d*) Apud Hildan. cent. 6. obſ. 70.
(*e*) In hac 14 ſepulch. ſect. ſchol. ad obſ. 20 §. 13.
(*f*) Theſ. 6. cit. ſupra ad. n. 16.
(*g*) Eph. n. c. dec. 2. a. 5. ſchol. ad obſ. 195.
(*h*) Obſ. 1. cit. ſupra ad n. 16.
(*i*) Tom. 1. p. 1. in adnot. ad Peyer. exercit. 1. de gland. inteſt.

without

without the iliac or colic paſſion, one of Peter Borelli (*k*), another of Frederic Loſſius (*l*), a third of George Segerus (*m*), a fourth of Gabriel Clauderus (*n*), and a fifth, in fine, of Peter Rommelius (*o*); for ſo many are there, that I at preſent call to mind. You yourſelf will eaſily find others. But if you ſhould even find as many as theſe, you would, I ſuppoſe, ſay that the throwing up of glyſters by the mouth, was not a very rare thing, but would not ſay that it is frequent. For the greater part of phyſicians have never ſeen it, even thoſe that are the moſt experienc'd; as their writings teſtify, where they happen to make mention of theſe obſervations, for in order to prove the circumſtance, they produce the teſtimony of others, inſtead of their own.

30. But let us now ſee by what new method the throwing up of glyſters by the mouth is explain'd. It is ſuppos'd that in a volvulus, all the inteſtines are full, or nearly full, of fluids that are either continually flowing into them, or taken in by the patients: and that there is ſome obſtacle or other in the lower part of the rectum, which hinders the diſcharge of theſe fluids, but which may be got over by thoſe who inject glyſters. The glyſters, then, that are thus injected, increaſing the fullneſs, and diſtention, of the inteſtines, and an alternate compreſſion of the abdominal muſcles, and diaphragm, coming on, it is ſuppos'd that they are driven to the part where there is the leaſt reſiſtance, and that, being mix'd with theſe humours, they are at length thrown up by vomiting. And that the valvula Bauhini does not reſiſt, as it will be naturally kept open, if you allow a fullneſs of all the inteſtines. Nor is there any need of the inverted motion, eſpecially as in beaſts, who were already ſeiz'd with a vomiting, on account of a ligature being made upon the ileum, this motion could not be obſerv'd, and even not the periſtaltic motion, which ſeems no longer to be fully acknowledg'd, in living and healthy bodies, if you attend to thoſe things which are in the latter part of this explication.

When I firſt read all theſe things, although there were ſome which I found could not be eaſily prov'd, yet I began to do, what ought never to be omitted in the inveſtigation of truth, that is to attend not only to the arguments which might be produc'd againſt this explication, but alſo to thoſe that might be produc'd in favour of it. In conſequence whereof I obſerv'd, that ſome of thoſe ſuppoſitions, which the ingenious author had confirm'd, not only by his own reaſonings, but by his own experiments, were alſo equally prov'd by mine. For as to what relates to the plenitude of the inteſtines, from the obſtacle quite to the ſtomach, this has been found in the manner he ſuppoſes, by my obſervations alſo upon human bodies (which he complains of being without) that had been afflicted with diſorders of this kind; as the hiſtories of the huſbandman (*p*), the porter (*q*), and in great meaſure that of a certain woman (*r*), which I have given you, demonſtrate. And ſuppoſing the fullneſs not only of the ſmall, but of the large inteſtines, I ſaw that the

(*k*) Cent. 1. obſ. 17.
(*l*) Vid. ſchol. modo cit. in eph. n. c.
(*m*) Earund. dec. 1. a. 9. obſ. 94.
(*n*) Earund. dec. 2. obſ. cit.
(*o*) Earund. dec. 3. a. 7. obſ. 39.
(*p*) Supra n. 9.
(*q*) N. 18.
(*r*) N. 11.

" impediment,

" impediment, which I had, in a general way, hinted the neceſſity of in-
" quiring into, in the Adverſaria (*s*), appear'd, by means of which impedi-
" ment, being interpos'd for a time," the valvula Bauhini " could not be
" properly ſhut up;" I ſay for a time; for if it be ſuppos'd perpetual, it will not be underſtood, by what means this valve may have immediately return'd to its office, after having ſuffer'd glyſters to paſs through it, as has been ſeen in ſome of theſe caſes which were pointed out juſt now (*t*).

For in theſe caſes, the explication of thoſe who have conjectur'd that the valve is either ruptur'd, or become paralytic, in patients afflicted with the ileos, would not be ſufficient. As this laſt conjecture, I ſuppoſe, cannot take place, even when the beginning of the colon is ſuppos'd to be immoderately dilated, with a great quantity of matter, which is collected together. For although the valve, by reaſon of the fleſhy fibres of the two inteſtines whereof it is compos'd being become paralytic, ſhould loſe that power of conſtringing itſelf, whatever that power might be; yet the two fræna, or bridles, which I have added, are ſo diſpos'd tranſverſly, on one ſide, and on the other, through the internal ſurface of the colon (*u*), that by a ſurprizing utility, the more this inteſtine is dilated, the more do they conſtringe the chink, or aperture, of the valve, which uſe I believe it very often performs in life, when, perhaps, there is a great quantity of matter contain'd in that part of the colon, and the muſcles of the abdomen are in ſtrong action to compreſs and propel it: and as I do not doubt, but that theſe things, in regard to the ſtructure of this valve, and its fræna, which I have deſcrib'd in words, and repreſented in plates, in the Adverſaria, are admitted by you; ſo I could wiſh that theſe things, and ſome others, which relate to me, had been conſider'd a little more attentively by ſome perſons: but of theſe things on another occaſion.

Finally, to omit other things, as to that action being attributed to the muſcles of the abdomen, and the diaphragm, which is generally attributed to the inverted motion of the inteſtines, that this is not done without reaſon, may be prov'd by thoſe caſes, in which the ileos has happen'd on account of the expulſive faculty being aboliſh'd, or from a loſs of tone in the inteſtines, as has been hinted at above (*x*), according to the opinion of Salius, and Ruyſch. In which place the authority of Boerhaave (*y*) may alſo be produc'd, who aſſerts " that in the numerous diſſections of living animals, he had
" never ſeen a periſtaltic motion in the large inteſtines," and he wonder'd, for this reaſon, " that glyſters ſhould nevertheleſs be thrown up, from the
" large inteſtines," by the mouth; for he did not doubt but this did hap-
" pen " ſometimes, as men of learning and authority bore their teſtimonies
" to it."

31. But notwithſtanding I had obſerv'd theſe things to be favourable to the propos'd explication, other things aroſe, by way of objection to it, which very evidently argued againſt it. And not to take up too much of your time, this in the firſt place, that if all the inteſtines are ſuppos'd to be full, or

(*s*) III animad. 9.
(*t*) N. 29.
(*u*) Adverſ. 3. fig. 1.
(*x*) N. 12.
(*y*) Prælect. ad inſtit. §. 816 in fin.

nearly full, it is not poſſible to conceive how the glyſters can be thrown up by vomiting, mix'd, as is ſaid, with other fluids, but quite pure, as they were given, and that not very long after their injection, and without any great diſcharge of thoſe humours, with which the whole canal, from the rectum to the ſtomach, is fill'd, or almoſt fill'd, having preceded.

For read the obſervations of Roſcius, of Schrockius the elder, and of the compilers of the Bibliotheca Anatomica, which were made upon volvulous patients, and which I have pointed out above (*z*): read alſo thoſe that I have taken notice of from Loſſius, Segerus, Clauderus, and Rommelius (*a*), where there was even no volvulus, ſo that very ſtrong compreſſions of the muſcles could be ſuppos'd; nor was there any obſtacle, except a ſlight coſtiveneſs in one or two, which could have confin'd the humours in almoſt the whole tube of the inteſtines. You will find among the ſeveral obſervations, that the glyſters were thrown up by the mouth, "wholly, entirely," and theſe "pure "as they had been applied, nothing at all chang'd," after they had been "retain'd in the inteſtines for an hour, after about the ſpace of an hour, "after a quarter of an hour, when a quarter of an hour had ſcarcely elaps'd, "in a moment of time," without any vomiting being any where taken notice of, betwixt the times of injecting the glyſter, and throwing it up by the mouth, not to ſay without ſo conſiderable a vomiting as you perceive there muſt have been, had the inteſtines been all full.

Since, therefore, the inteſtinal tube, in theſe caſes, was neither full, nor nearly ſo, it appears, without doubt, that another explication muſt be ſought after, from which it may be clear, not only what cauſe could propel the glyſters, from the rectum to the ſtomach, but alſo, by what means the valvula Bauhini could be kept open. And we muſt take care, now in particular, when there are many who call into queſtion, the powers of the diaphragm, and abdominal muſcles, to excite vomiting; we muſt take care, I ſay, leſt, as to what relates to the firſt cauſe, that be too haſtily rejected, which even from ancient times was plac'd in the inverted motion of the inteſtines. For although this motion was certainly not readily to be allow'd of, where the inteſtines were tied, diſtended, inflam'd, or paralytic, why is it to be denied where there is none of theſe circumſtances? And there could be none of theſe circumſtances, in thoſe obſervations which were taken when no volvulus was preſent, nor was it neceſſary even when this was preſent, or at leaſt it was not always neceſſary, that it ſhould be in a great part of the inteſtines, and eſpecially in that which I particularly refer to here, that is in the large inteſtines.

Why, therefore, muſt we altogether, and at all times, reject this cauſe, and ſuffer it to have no part in the performance? Is it becauſe the periſtaltic motion is perhaps ſcarcely to be acknowledged any longer? How is it then? Is it poſſible for the nature of animals to be ſo chang'd, that in our age the circumſtance ſcarcely appears any more, which thoſe very ancient obſervers have ſeen, in conſequence of whoſe opinion Cicero has expreſly written (*b*), "that the inteſtines both conſtringe and relax themſelves alter-"nately," either to agitate and prepare the food, or to drive the remains of

(*z*) N. 29. (*a*) Ibid. (*b*) L. 2. de nat. deor.

it, after concoction, downwards? But leſt it ſhould happen to any one of thoſe whom I have refer'd to, in the preface to the ſecond Adverſaria, near the latter end, that this paſſage of Cicero, alſo, may ſeem "to be quoted" by me, "by way of pretty ſevere reproach," I chooſe rather to neglect what might be replied on this occaſion, and to come down from the ancients, to the more modern obſervers. Shall I then forget the great number of obſervations, not only of others, but of my own alſo, on dogs, ſheep, and rabbits, diſſected alive, though this motion often occurs to the eyes of thoſe perſons who do not look for it, and even, as happen'd in a rabbit particularly, a motion alternately antiperiſtaltic. But it is very little to the purpoſe, now, to ſhow that one of theſe motions has been obſerv'd in human bodies alſo, and ſometimes both, ſince the celebrated Haller (*c*) has produc'd examples thereof: to which, however, if you pleaſe, you may add that of a matron, who had a very conſiderable omphalocele, or umbilical hernia, which was ſeen by the compilers of the Bibliotheca Anatomica (*d*). And the ſame Haller (*e*), even before he publiſh'd ſo many experiments (*f*), caution'd us from believing that becauſe it had happen'd to his great preceptor, that he never, as I have ſaid, ſaw a periſtaltic motion in the large inteſtines, it had therefore never been ſeen by any one; for he quoted Wepfer, in particular, who ſaw it very evidently in theſe inteſtines likewiſe, and not only the periſtaltic, but alſo the antiperiſtaltic, as you will learn from the paſſage of Wepfer, which is, in like manner, transfer'd into the Sepulchretum (*g*).

32. From theſe things, which I have conſider'd on both ſides of the queſtion, you will eaſily perceive, that any probable cauſe, which tends to explain the ſymptoms that happen in the volvulus, particularly thoſe that are difficult, and not as yet ſufficiently clear, ought not to be entirely rejected.

But as to the cauſes which create an obſtacle to the matter, that deſcends through the inteſtines, if you inquire of me, whether I ever found that contorſion, or twiſting, which was formerly ſo much talk'd of, or at leaſt an intus-ſuſception, as it is call'd, which is even very frequently confirm'd by the more modern authors; I ſhall ingenuouſly anſwer, that I have as yet lit on neither of them, juſt in this manner, as I ſhall explain hereafter (*). Yet I do not, for this reaſon, in regard to the firſt cauſe, ſuſpect any of the obſtacles of this kind that are deſcrib'd, but only becauſe, while the connection of the inteſtines with the meſentery is preſerv'd, this contorſion cannot be conceiv'd.

But the ſecond, or the ſuſception of the inteſtine within the inteſtine, is not only conceivable, while the connection with the meſentery is preſerv'd, but is alſo very injurious, on account of this very connection. For when one part of the inteſtine enters within the part next to it, the portion of the meſentery, that is annex'd thereto, muſt enter in at the ſame time. Wherefore, if it ſtay there for any conſiderable time, and any conſtringing cauſe come on, the motion of the blood, through its veſſels, being retarded, it will ſwell to

(*c*) Ad Boer. prælect. §. 93. n. 6.
(*d*) Tom. 1. p. 1. adnot. penult. ad Warthon. de meſent.
(*e*) Ad cit. prælect. §. 107. not. 3. & §. 109. not. 30.
(*f*) De reſpir. p. 3.
(*g*) Schol. ad. §. 2. obſ. 1. hujus ſect.
(*) N. 34.

ſuch

ſuch a degree, as to hinder the inteſtine that has enter'd in, from receding, and likewiſe prevent the paſſage of the matter that was about to deſcend through the cavity; to ſay nothing of the ſphacelus that at length comes on, on account of the circulation of the blood being entirely precluded, which, as the illuſtrious Haller ſaw (*b*), was the cauſe of death in a certain man. And every part is ſo much the more conſtring'd and compreſs'd in that place, in proportion as the part of the inteſtine which is puſh'd within the part neareſt to it is larger or more complicated; for this complication has been ſometimes ſo great, that a portion of the inteſtine, which while thus conglomerated together did not exceed half an inch in length, was equal almoſt to two ſpans when drawn out (*i*). And ſo much the greater extent enters in, in proportion as the cauſes are greater, or more long-continu'd, which impel the part that enters, and dilate the part which receives.

Among the latter cauſes, for the moſt part, is flatus, and among the former, ſometimes, is weight, as in the obſervation of the ſame compilers of the Bibliotheca Anatomica (*k*), whom I have once and again quoted, which is an extraordinary obſervation, not on that account only, but alſo becauſe the ſuſception had happen'd in the colon, in which I read that very few had ever ſeen it beſides Ruyſch, who confeſſes (*l*) that he had ſeen it only once, whereas he had ſeen it ſo often in the ſmall inteſtines, that no body more frequently. However, no cauſe is ſuppos'd to be more common than convulſive motions: which the experiment of Peyerus, wherein the inteſtines of a living frog were ſtimulated, in more places than one, ſhows to be capable of producing this effect: this experiment you will read in the Sepulchretum (*m*). And the ſame thing ſeems to me to be confirm'd, by the obſervations of Peyerus himſelf (*n*), but in particular by thoſe of Ruyſch (*o*). For the former ſaw in the inteſtinum ileum of a girl, in which were three ſuſceptions, worms "roll'd up together, as it were, in one place;" and Ruyſch ſaw the very portion of the ileum, which had enter'd into another, in a man, "fill'd with worms circularly plac'd," and a ſecond time he ſhow'd a ſuſception of the ſame inteſtine, "in a boy, to have worms in it." And it is very evident that the inteſtines may be very much irritated from worms.

Indeed that eminent phyſician Heiſter (*p*), having found a double ſuſception, in the ſmall inteſtines of a boy of twelve years of age, and having obſerv'd the ſame inteſtines to be "very full of worms," thought it "worthy "to be obſerv'd in the practice of medicine, eſpecially if they are very young "ſubjects, which fall under our care," that the iliac paſſion may ſometimes ariſe from worms alſo. And for this reaſon, perhaps, it has been, that I have ſeen the greater part of the ſuſceptions remark'd in children. While I attend pretty diligently to ſome of thoſe things, which I have hitherto taken notice of, I cannot help adding my own obſervation in this place, in reading of which, if you begin to wonder that I had juſt now denied my ever having ſeen a ſuſception of the inteſtine, you will, at leaſt, ceaſe to wonder, when you have conſider'd thoſe things which I ſhall ſubjoin to the obſervation.

(*b*) Strena anat. n. 9.
(*i*) Vid. Sepulchr. §. 2. modo cit.
(*k*) Adnot. cit. ſupra ad n. 29.
(*l*) Adverſ. anat. dec. 3. 5.
(*m*) Schol. ad §. 8. obſ. 20.
(*n*) §. modo cit.
(*o*) Theſ. anat. 4. n. 14. & Theſ. nov. n. 57.
(*p*) Eph. n. c. cent. 1 & 2. obſ. 198. n. 3.

33. A virgin of forty-five years of age, having received a violent blow on her head from a fall, not only vomited in the beginning, but continually; ſhe liv'd in this hoſpital more than twenty-one days, in which time, however, ſhe ſeem'd frequently upon the point of expiring.

In the abdomen; for I only inſpected the viſcera of this cavity, and that not with a view to the diſeaſe; the inteſtines were ſtill warm, although it was many hours after death, that I handled them, and at leaſt one hour from the time of cutting into, and laying open the abdominal cavity, as I was engag'd about ſome other buſineſs in the mean time, and although it was at a time of the year which is generally cold, that is about the middle of December, in the year 1724, when the ſeaſon was extremely cold. Part of the ſmall inteſtines was diſtended with flatus, eſpecially that part which lay under the cæcum, for which reaſon this inteſtine, with its appendicula, was turn'd forwards: the remaining part was reddiſh, and had a kind of putrid ſmell. In this part I ſaw the ſuſception, of which I am ſpeaking, not leſs evident, and even ſomewhat longer, than it is delineated by Ruyſch (*q*).

But while I was deſirous to learn very diſtinctly, in what part of the inteſtines it was, and how cloſe it was, and for that reaſon turn'd over the inteſtines gently, as one generally does, in order to begin from the other head of the ſmall inteſtines, I found out this head very clearly, but the ſuſception I could no more find. For all the ſmall inteſtines being examin'd accurately, from one extremity to the other, and back again, and run over with the hand, this ſuſception no where appear'd, and indeed not a trace of it, ſo that it was very plain it had not been cloſely conſtricted. Then opening the ſmall inteſtines, which was all that remain'd to do, I ſaw, in the duodenum, a matter like fluid fæces, in the neigbouring tract of the jejunum, a round worm, and in the ſame tract, and the neighbouring part of the duodenum, I ſaw, here and there, bloody ſpots, with which both of them were diſtinguiſh'd internally, as if from inflammation, which had begun to be the conſequence of the irritation, And in the remaining inteſtines, and the abdominal viſcera, I alſo obſerv'd, and demonſtrated, many things, but not ſuch as had reference to the diſeaſe, if you except ſome that were remark'd in the organs of generation, and in the bladder, or rather in the urethra. For the uterus being laid open with the knife longitudinally, from the ſanguiferous veſſels, which appear'd to be parallel throughout the internal ſurface, ſome black corpuſcles, as it were, ſeem'd to be prominent, here and there, ſo that I at firſt took them for very ſmall varices. But when I examin'd them in the morning, by the light of the ſun, I found that they were not varices, and indeed I much doubted whether they were really in theſe veſſels. For I ſaw that two larger bodies, which lay in the common boundaries of the bladder, and urethra, were peculiar ſubſtances, brown in their colour, and roundiſh in their figure, and when I touch'd them, I perceiv'd them to be hard; ſo that I believ'd them to be calculi *ſui generis*, which had been concreted under that internal coat, and rais'd it up; and that the others, as they were leſs in ſize, were alſo leſs hard, and not roundiſh, yet were made of a matter of the ſame kind, and in the ſame manner, but were not yet perfectly form'd.

(*q*) Obſ. chir. anat. fig. 74.

As

As I had obſerv'd this kind of diſorder which is perhaps new, and which, in proceſs of time, would, probably, have made the urethra very narrow, and was certainly injurious even now; I diſſected the uterus, to ſee if I could find the original ſprings of that whitiſh, and thickiſh humour, with which I ſaw that the vagina was too much moiſten'd. But I ſaw nothing that was not uſual, in this cavity, except a ſmall heap of little veſicles, which was prominent in ſuch a manner, that the area thereof did not exceed the circumference of the nail of the little finger. This was on the anterior ſurface of the cavity of the uterus itſelf, on the right ſide, and nearer to the upper part of the ſame cavity, than to the cervix uteri; ſo that, at firſt, I ſuſpected it to be the beginning of the excreſcence, of the ſame kind with that which you have read my deſcription of, in the cavity of the uterus, frequently, upon other occaſions. And this ſuſpicion was confirm'd by the prominence: but the nature of the veſicles, which cover'd the face of the prominence, did not agree therewith; for they themſelves, and the mucus they contain'd, were entirely of the ſame kind, and had the ſame natural appearance, with thoſe that were below in the neck, in greater number, which I have formerly pretty well deſcrib'd, and repreſented by figures (*r*); not hydatids, which were not wanting here, alſo, at the tubes, and near the ovaries, white, hard, and ſtrigoſe.

But veſicles containing a limpid mucus, which could be drawn out into threads, plac'd in ſo high a ſituation, as in this virgin, and there collected into a heap, I do not remember to have ſeen, except very ſeldom. For if they had always appear'd in this manner, one of the great difficulties, in the opinion of Nabothus, would be remov'd.

34. But of this on another occaſion. Now let us return to the intended diſcourſe. You ſee that in this virgin, a part of the inteſtine had fallen into the part which was neareſt to it: that on one ſide there was flatus to dilate; and on the other a worm, which, by ſtimulating, might contract the inteſtine, and excite inflammation: that an obſtinate vomiting was not wanting, nor yet in the duodenum, a matter like liquid fæces. All theſe circumſtances concur'd to prevent me from omitting this hiſtory here. But the very violent blow of the head, which of itſelf generally excites a vomiting, the very ſlight inflammation in the ſmall inteſtine, which ſeem'd to be but lately begun, and which, perhaps, is to be accounted for as is hinted in the nineteenth letter (*s*), but, in particular, this ſuſception, which was ſo very lax that it eaſily became evanid, without leaving any traces behind it, have influenc'd me not to conſider it as the cauſe of theſe vomitings, nor yet to number it among thoſe cauſes of which I am at preſent treating. For I do not here refer to thoſe which are frequently found, and are eaſily develop'd, ſuch as I ſuppoſe thoſe three to have been, that Abraham Vater (*t*) ſaw in the inteſtinum jejunum of a girl, without any ſigns of a volvulus; and ſuch as they probably were, that are deſcrib'd in the ſame inteſtine of three bodies, in the obſervation of the celebrated Hommelius (*u*), wherein no mention is made of any of theſe ſymptoms; and, not to be too prolix, ſuch as they were, without doubt, that

(*r*) Adverſ. anat. 1. n. 32. & tab. 3.
(*s*) N. 18.
(*t*) Progr. edito a. 1727. m. April.
(*u*) Commerc. litter. a. 1743. hebd. 42. in fin.

are deſcrib'd by the celebrated Haller, not in the *Strena Anatomica*, from which I quoted one above (*x*), but in the *Opuſcula Anatomica* (*y*), for theſe were many in number, and had various ſituations, ſo that one of them was from the lower part of the colon, in the upper part of the inteſtinum rectum.

And ſome are even met with that are not ſo eaſy of evolution, as that which was found by the celebrated Jo. Phil. Burgravius (*z*), "in a pretty "confin'd ſtate," yet without any ſign of the iliac paſſion being join'd with it: was it becauſe no inflammation had come on? Though indeed an inflammation had not ſucceeded to the other, which was ſeen by the ſame perſon (*a*), yet there had been ſome tormina at leaſt, and a vomiting of the remedies which were taken in: did theſe ſymptoms ariſe from the inteſtine having been puſh'd within itſelf, to twice the depth of the other, in this ſecond caſe?

But Hartmann (*b*) found an intus-ſuſception of the inteſtine to a conſiderable depth, and that in three places, nor equally eaſy of evolution in them all; and he even found the inteſtine to be there "ſomewhat turgid externally, "and bloody, an evident mark of the tumor remaining even in a portion "that was cut off;" nor was a very long worm wanting in the ſmall inteſtines of the ſame body: yet he mentions no ſymptoms of a volvulus; but even remarks, "that the inteſtines had perform'd their functions very well, "doubtleſs, becauſe the paſſage was not entirely obſtructed by theſe ſuſcep-"tions." And Jo. Guil. Widmann (*c*) found alſo a much longer portion of the inteſtinum jejunum, that is more than a geometrical foot, fallen within the part next to it, "much ſtreighten'd and compreſs'd, and infected with a "livid colour," and this after pains which had been indeed very ſevere, and almoſt continual vomitings, yet not of matter like fæces, nor attended, as he ſays, with a ſuppreſſion of ſtools, which was probably becauſe the inverted portion, although narrow, was found to be ſtill "pervious."

Wherefore, I ſhould readily believe, that theſe two ſuſceptions were ſtill more pervious, and not only ſhorter and leſs compreſs'd, which that celebrated man Jo. Rod. Zuingerus (*d*) found in the inteſtinum ileum, together with an incipient gangrene, who certainly would not have omitted to mention ſome marks of an iliac paſſion, if any had preceded: but on the other hand, I ſhould ſuppoſe thoſe two were leſs pervious, which Valentinus (*e*) found in the ſame place, as he relates the ſame ſymptoms as Widmann, and does not doubt but a vomiting of excrement would have come on, if the boy had liv'd ſome time longer: which you will find did come on, in another deſcrib'd by Hoffmann (*f*); the ſuſception, which was in the ſame inteſtine, ſerving at once to prevent the paſſage of the flatus, with which the upper inteſtines were diſtended, and that of a putrid humour which was ſeen in the ſtomach, of the ſame colour with that which had been thrown up by vomiting.

(*x*) N. 32.
(*y*) Obſ. 27.
(*z*) Act. n. c. tom. 7. obſ. 5.
(*a*) Earund. t. 5. obſ. 80.
(*b*) Eph. n. c. dec. 3. a. 5 & 6. obſ. 207.
(*c*) Earund. cent. 6. obſ. 89.
(*d*) Earund. cent. 7. obſ. 83.
(*e*) Earund. cent. 3. obſ. 1.
(*f*) Med. rat. t. 4. p. 2. ſ. 2. c. 4. obſ. 4.

To theſe you will add, in particular, the obſervation of the celebrated Weiſſius *(g)*, who in the body of a woman, that died after having been afflicted with violent pains of the belly, join'd with an obſtinate obſtruction of the inteſtines, and at length with a volvulus, found the extremity of the ileum fallen within the colon, concreted with the membranes of it, and contracted ſo as to prevent the progreſs "of a fœtid liquor, almoſt of the nature of ex-"crement," with which the ſmall inteſtines were ſeen to be "ſurprizingly "diſtended," being attended with inflammation at the ſame time.

Nor, finally, is that obſervation to be omitted, though made upon a dog, which the celebrated Wahrendorff *(b)* has given us. This creature having had no diſcharge by ſtool for ſome weeks, had vomited up every thing he took with miſerable howlings; and having at length died, diſcover'd no inflammation, or obſtruction, in the inteſtines, except that "about the begin-"ning of the inteſtinum rectum, there appear'd an intus-ſuſception, to about "the length of two inches, which ſhut up the paſſage ſo compleatly, that "not even the leaſt flatus could be tranſmitted." From all theſe obſervations which I, according to cuſtom, have taken notice of, in order that you might have ſome to add to the Sepulchretum, you eaſily perceive, that an obſtruction of the inteſtinal canal, or a conſiderable and long-continu'd coarctation, has more effect towards producing a volvulus, than an inflammation; and that therefore an intus-ſuſception which does not cauſe an obſtruction, or coarctation, as thoſe that are ſlight, and eaſily moveable, by no means do, ought not to be attended to by us here.

To this claſs I refer thoſe that I have hitherto happen'd to ſee, and readily acknowledge them to be of that kind, which an eminent author in anatomy and ſurgery, of the preſent age, has aſſerted to occur in many bodies, who died of a natural death, and who had been afflicted with no pain. But while he aſcribes ſo much to the obſervations of this kind, as to ſuppoſe that the doctrine of others, who have plac'd intus-ſuſception of the inteſtines, among the cauſes of a volvulus, is a mere figment, I cannot coincide in opinion with him, unleſs I would run counter to ſo great a number of obſervations of other perſons, that are contrary to his, and even run counter to reaſon itſelf.

For although I acknowledge, that it is not at all neceſſary any very violent diſorder ſhould ariſe, where there is a lax ſuſception, that does not ſtreighten the paſſage greatly, yet on the other hand, I maintain, that if the ſuſception is not lax, and ſhuts up the paſſage for a long time together, or at leaſt nearly ſhuts it up, a volvulus, or pains, inflammations, and other ſymptoms of this kind, are the conſequences, as you ſee in the hiſtories which are pointed out in this ſection of the Sepulchretum, under number twenty, and in others, but particularly in thoſe of Ruyſch *(i)*, and in ſome of thoſe beſides which are referr'd to here, or above *(k)*.

35. However, it is evident that a volvulus may be brought on, not only by ſuſception, or by a hernia, or by an inflammation of the inteſtines, but alſo

(g) Commerc. litter. a. 1745. hebd. 24. n. 1. ad 11.

(b) Act. n. c. tom. 3. obſ. 132.

(i) Obſ. anat. chir. 91. & adverſ. anat. dec. 3. 5. & theſ. anat. 10. n. 62. & alibi.

(k) N. 32.

by

by other cauſes, which either obſtruct, or ſtimulate them, as appears both from the obſervations of others, and from mine alſo, which I ſhall communicate to you on future occaſions; and from cauſes that obſtruct, neceſſarily, and unavoidably, provided life laſts for any conſiderable time with them; but from ſtimulating cauſes, ſometimes only. And the obſtructing cauſes often relate to the coats of ſome inteſtine, as, for inſtance, that ſcirrhous ring ſpoken of in the thirty-ſecond letter (*l*); for ſtercoraceous vomitings were at length the conſequences thereof: and, at other times, relate to the contents of the inteſtines, and not only to the harden'd excrements, as in the example related by Hoffmann (*m*), where, being collected together, to about the quantity of twenty pounds, they had ſo diſtended the colon of a certain prince, who was afflicted with the ileos, that they at length burſt through it; but alſo, ſometimes, to a calculous matter, which is gather'd about gall-ſtones, or about gold coins, that have been ſwallow'd, and which being ſo increas'd by their long continuance in the inteſtines, has brought on the ſame diſorder, by ſhutting up the paſſage, and rendering it impervious: examples of which things, to paſs over thoſe of others, you will find in the books of the Cæſarean Academy (*n*).

Moreover you will in theſe ſame volumes, alſo, find inſtances which you may ſet down to the claſs of ſtimulating cauſes (*o*); as when a young man, by a fall upon his abdomen, ruptur'd the bladder, and caus'd the urine to be pour'd out into the cavity of the belly, ſo that the inteſtines being ſtimulated by an unuſual acrimony, which the inflammation, and gangrene, that was the conſequence of their inflammation, ſhow, inverted their periſtaltic motion; or when the abdomen of a full-grown fœtus being bruis'd by a like fall of its mother, was the reaſon that blood ſtagnating, and putrefying, in the veſſels of the inteſtines, brought on equal effects therein, by irritation, for the infant diſcharg'd nothing at all from the rectum, but every thing, even the meconium itſelf, by the mouth, and died in a miſerable manner within eight days from its birth. And if the ſtimulus excite convulſions, what they are capable of doing, not only by producing ſuſceptions, as I have ſaid above (*p*), but alſo without theſe by inverting the motion of the inteſtines, the experiments of Brunnerus (*q*) will ſhow; I mean the grandſon, who was worthy of his grandſire; by which it appears that convulſions being excited in the inteſtines of beaſts, the excrements, which could not now be diſcharg'd through the anus, aſcended into the ſtomach and œſophagus. And a diſeaſe which by reaſon of its very violent tormina, and continual vomiting, and by reaſon of the large inteſtines being unuſually ſtreighten'd, when the ſmall inteſtines were very turgid, and red, and fill'd with a remarkable quantity of extravaſated, and fluid blood, is very ſimilar to the volvulus, has been accounted for by the celebrated Kulbelius (*r*), from ſpaſmodic contractions. And whether it was from theſe ſpaſmodic contractions returning now and then, or from the effect of them which remain'd, that the ſame inteſtines

(*l*) N. 5.
(*m*) C. 4. paulo ante cit. §. 13.
(*n*) Act. t. 7. obſ. 100. & cent. 1 & 2. obſ. 154.
(*o*) Cent. 7. obſ. 30. & act. t. 3. obſ. 131.
(*p*) N. 32.
(*q*) Experim. circa ligat. nerv. §. 31.
(*r*) Commerc. litter. a. 1737. hebd. 20. n. 2.

had

had ſome parts which were unequal, and, at unequal intervals, præternaturally narrow, in that anatomiſt Jo. Wilhelmus Albrechtus, who, while he liv'd, was very often ſubject to the ileos, you yourſelf will judge (*s*).

36. But among the cauſes which ſometimes bring on the iliac paſſion by ſtimulating, worms muſt of courſe be enumerated. For ſometimes, as is hinted at above (*t*), by exciting convulſions, they cauſe intus-ſuſceptions, and volvulus: and it is not to be doubted but they can excite a volvulus, without cauſing ſuſceptions. At other times they create pains in the inteſtines only. And ſometimes not even theſe. And it alſo frequently happens, that a great number of worms are found in thoſe bodies, in which, while living, there had ſcarcely been the leaſt ſymptom of worms: and this you will ſee ſufficiently confirm'd, by reading over again the hiſtory of the country-woman deſcrib'd in the ſixteenth letter (*u*), or what I formerly wrote of the hound (*x*), in which there were tæniæ, to the number of ſixty. And, on the other hand, there are ſometimes ſymptoms of worms, and none are found, as you learn from the hiſtory of the boy given you from Valſalva's papers, in the thirty-firſt letter (*y*); and not to dwell too long upon an obvious thing, the ſame will appear from another alſo, that is related in the Sepulchretum (*z*).

But in regard to worms exciting pains of the belly, I ſhall perhaps have occaſion to ſpeak on this ſubject, at another time, and to enquire more at large, whether, as they irritate the inteſtines in the living body, it is likewiſe to be ſuppos'd in all the hiſtories, which are produc'd to prove it, that they perforated the inteſtines before death, or rather that they perforated the inteſtines after death, and if they did really pervade the inteſtines before death, whether it was where an abſceſs, or ſome kind of ulcer, had open'd them a paſſage from the inteſtines. For many and various obſervations are produc'd: of which, however, it will be ſufficient to point out ſome to you, of thoſe that you may add to the Sepulchretum. See firſt two of theſe in the acts of the Cæſarean Academy (*a*). In one of which, in proportion as the inteſtines are ſaid to be more fill'd with an incredible quantity of worms, from the upper to the lower part of that tube, it may perhaps ſeem to be render'd ſo much the more credible, that they, eſpecially as they were inſtigated by a quantity of bitter elixir, had begun to perforate the inteſtines in the living body, from which they were already protruded by half their length. An equal, and even a greater, quantity of worms was found by our Molinetti (*b*); for beſides thoſe, with which all the inteſtines were fill'd, and ſtuff'd up, others had got out from the inteſtinal tube, which was perforated like a ſieve, and fill'd the abdominal cavity all around. But theſe appearances were ſeen in the dead body, as thoſe alſo which I found in a hen (*c*).

But how is it when they are ſeen in the living body? A very ancient obſervation is extant of Hippocrates (*d*), made upon a little child of Dinius, from whoſe navel, "a large worm ſometimes" came out. But as a "fi-

(*s*) A. 1736. hebd. 12. n. 1.
(*t*) N. 32.
(*u*) N. 38.
(*x*) Epiſt. anat. 14. n. 48.
(*y*) N. 5. (*z*) Obſ. 1. §. 2.
(*a*) Tom. 1. obſ. 172. & tom. 5. obſ. 68. prope fin.
(*b*) Diſſert. anat. Pathol. l. 6. c. 4.
(*c*) Epiſt. anat. 14. n. 44.
(*d*) Epid. l. 7. haud ita procul. a fine.

" tula" had been left there from a foregoing wound, and the worm and bilious ſordes came through the ſame place; it was certain, beyond a doubt, that the ſmall inteſtine was perforated; but it was from a wound; for that it was perforated by the worm, was not even ſuſpected by the grave interpreter Valleſius (*e*). There is likewiſe extant; not to digreſs improperly from thoſe obſervations which are join'd with the diſſection of the body; there is extant, I ſay, in the acts juſt now quoted (*f*), an example of fifteen worms coming out from the right hypochondrium, and the loins, on the ſide that correſponded thereto, yet through tumours which had been form'd in both places, and ſuppurated; the origin of which is attributed to the worms, indeed, having gnaw'd the inteſtinum colon, but at the ſame time to a vitiated, corrupt, and eroding ſaburra, which had been collected there. When you read, therefore, in the firſt (*g*) and ſeventh (*h*) centuries of the ſame Cæſarean Academy, other obſervations of that kind; although in the ſecond, for the ſake of brevity, perhaps, no mention is made of any tumour, or abſceſs, you will conſider what any one might ſuſpect. For it is my intention here, as I have ſaid, to point out the examples which relate to the various cauſes of pains in the inteſtines, and not to enquire how, and in what manner, they happen'd.

When we enquire into this, another thing, alſo, muſt of courſe be enquir'd into, which the obſervation of Platerus (*i*), relating to the volvulus likewiſe, affords us a handle for the inveſtigation of, I mean whether worms are viviparous. For he ſaw the inteſtines of a boy, or rather of a young man, ſurprizingly convoluted, twiſted, intangled, and diſtended, not only with excrements, and flatus, " but alſo with living worms, oblong in their " figure, and in great number, which were again fill'd with other leſſer " worms." You will alſo read this obſervation in the Sepulchretum, not only in the fourteenth ſection which we are at preſent upon (*k*), but alſo in the twenty-firſt (*l*), and you will the more attend to it, if you light on the diſſertation, in which the ſkilful phyſician Zamponius deſcribes to the celebrated Plancus, a worm which was diſcharg'd by another boy, and which brought forth, under his very eyes, ſoon after, many ſmall living worms to the number of eight and twenty. But all theſe things relate to the round worms.

37. For as to what I remember to have read of the teniæ, and aſcarides, juſt as if they perform'd the office of ovaria, or rather of a uterus, to the others; either I am much deceiv'd indeed, or the queſtion is of ſuch a nature, that makes it very needleſs for me to convaſs it, as this alſo is, whether " the tæniæ are aſcarides, that are mutually join'd to each other," eſpecially as they who aſſert it, confeſs, " that the aſcarides are lodg'd only in the in- " teſtinum rectum," and in like manner, whether the aſcarides " are worms proper, as it were, to the human body; whether other ſpecies of worms are " very rare," and other queries of the like nature, which, in my opinion, ought to be interpreted differently, as they, at the very firſt ſight, ſeem to ſhow.

(*e*) Comment. in eum. l. n. 105.
(*f*) Tom. 6. obſ. 93.
(*g*) Obſ. 39.
(*h*) Obſ. 7.
(*i*) L. 3. obſ. ubi de extuberantia.
(*k*) Sub n. xxi. §. 1.
(*l*) Sub n. xxii. §. 4.

At

At leaſt Valliſneri (*m*) did not doubt but the tænia was made up of *vermes cucurbitini*, worms which he thus call'd in common with others, and which laid hold of one another mutually, uſing among others the ſimile, that I ſee even Homer had made uſe of formerly (*n*), for another purpoſe; I mean that of bats, which hanging from a rock, in the receſs of a great cave, are mutually held by each other. But I have often wonder'd that the opinion which Valliſneri patroniz'd, could not be confirm'd by me, in ſo many teniæ which I have accurately inſpected, and examin'd, and theſe taken from quadrupeds, fiſhes, and birds: and thus you will eaſily perceive, if you read attentively the obſervations which I have publiſh'd, in the fourteenth of the Epiſtolæ Anatomicæ (*o*); and even if you read that which Valliſneri formerly publiſh'd, with my letter which was written to him (*p*): from which obſervations, it will rather ſeem to you to be gather'd, that each of theſe teniæ are diſtinct long worms, than a concatention of many. But now I have ceas'd to wonder, ſince I have learn'd that by the induſtry of the celebrated Winſlow, a duct is, at length, found out, and clearly prov'd, by an injection of a very fluid matter, which went through the whole length of the tenia.

If this duct had been known at the time in which I, or Valliſneri, wrote, and the experiments had been publiſh'd, by which it appears that aquatic worms, divided into many parts, had liv'd about three months, without any nouriſhment; and, by a new obſervation, it had alſo been made probable, in another ſpecies of teniæ, that in the very ſlender extremity, which ſeem'd to be the tail, was the head of the teniæ; not only I ſhould more readily have underſtood what I ſaw, but he would have ſought out other arguments to ſupport his opinion, or rather, as he was a man very ſtudious of truth, would have entirely diſcarded it.

But theſe things that I have mention'd, have come forth ſince that time, as you will learn from the diſſertation, of the very experienc'd Bonnet, upon the tænia, which is written accurately, learnedly, and ingeniouſly, and which was preſented to the Royal Academy of Sciences at Paris (*q*). This diſſertation will perhaps furniſh us with an occaſion of enquiring into other things, at ſome future opportunity. But now, ſtill keeping my ſubject in view, I return from theſe diſquiſitions, which came accidentally in my way, to my original intention, as I ſee that ſome things ſtill remain, out of thoſe which relate to pains of the inteſtines, which deſerve conſideration, and are deſireable to be known; but as this letter is already very long, I ſhall defer what remains to be ſaid on this ſubject, to the next. Farewell.

(*m*) Conſideraz. int. alla generaz. de vermi &c.
(*n*) Odyſ. l. 24. ſub initium.
(*o*) N. 47. uſque ad 55.
(*p*) In calce modo cit. libri.
(*q*) Memoires preſentés à l'acad. r. des ſc. tom. 1.

LETTER the THIRTY-FIFTH

Concludes the Diſcourſe upon Pains of the Inteſtines.

IT is true that I have compris'd in the laſt letter, a great number of examples of pain in the inteſtines, and of the inflammation and gangrene that are the conſequences of it. Yet other examples ſtill remain, which ſo much the more deſerve attention from you, and other junior phyſicians, as you will find that the patients were ſnatch'd away in a ſhorter time, or under a more deceitful appearance of remiſſion. I ſhall begin with theſe of the firſt kind, and even with the caſe of a young man, who was extremely well-known to me, when I was at Bologna, and whoſe diſeaſe was ſo rapid in its progreſs, that I had ſcarcely heard of his diſorder before I heard of his death. And the following is the narration of the caſe, for it was not written by Valſalva, but deliver'd to us from his own mouth, at the time in which it happen'd.

2. Lælius Lælii, a native of Imola, in the papal territories, a ſtudent in medicine, was a lover of ſolitude, and by nature eaſily iraſcible: this young man, when he was in good health as uſual, without any previous cauſe, except that he knew his father was then at the point of death, and expected, every hour, the melancholy news of his having actually expir'd, was ſuddenly ſeiz'd, about the fourth or fifth hour of the night, in the middle of November, in the year 1705, with a violent pain in the umbilical region, which ſometimes was moſt troubleſome in one part, and ſometimes in the other, but never went out beyond ſome certain ſpace of that ſame region. The perſon with whom he lodg'd being wak'd by his cries, gave him, according to the advice of ſome neighbouring phyſician, a doſe of *Philonium Romanum*. This was thrown up by vomiting; for he had already begun to vomit a porraceous bile, which afterwards became æruginous, and at length, when he was near death, black, yet ſtill ſo as to be inclin'd to a feruginous colour.

In the morning, about ten hours after the beginning of the pain, Valſalva was call'd to the patient. Who, obſerving an unpromiſing aſpect in the face, an abdomen tenſe, and painful to the touch, a low, and as it were conſtricted pulſe, which could hardly be felt, a urine of a red colour degenerating into brown and extremely turbid, and other things of this kind, and ſeeing that ſo much miſchief was done in ſo ſhort a time, and calling to mind other obſervations of his, of diſorders not much unlike this, pronounc'd

nounc'd that he would die within the ſpace of twenty four hours. Yet that the patient might not be immediately ſenſible of this, he order'd freſh-drawn oil of almonds to be given internally, and the belly to be anointed with oil of violets, with the addition of camphor, and two ſenior phyſicians to be ſent for. Theſe gentlemen coming four hours after, he ſaid to them, you will ſee a young man, a worthy-fellow citizen of mine, ſtruggling with ſo oppreſſive a diſorder, that unleſs you can adminiſter ſome relief, I fear he will not be able to bear up under it long; for, in regard to myſelf, I ingenuouſly confeſs, I do not ſee wherein I can aſſiſt him. At the ſame time he relates the caſe, and introduces them to the patient.

After having examin'd into the ſymptoms, it was their opinion that he was oppreſs'd by a convulſion, and that, therefore, blood ſhould be taken away from his foot: and that a large cupping-glaſs ſhould be fix'd to the abdomen. Valſalva was averſe to the idea of blood-letting, but as he deliver'd his opinion with modeſty, he was overcome by the contrary opinion of the ſenior phyſicians. A vein was twice open'd: from the firſt orifice no blood at all came; from the ſecond, blood did, indeed, ſpring forth, but immediately loſt its impetus, and came out in ſo languid a manner, that although the orifice was ſoon after tied up, the pulſe could no more be perceiv'd. A ſlight delirium afterwards came on: the eyes ſhow'd ſomething of a convulſive appearance: the reſpiration became difficult: and, finally, death came on, according to the prediction of Valſalva, in the following night.

Valſalva, when he put his hand on the abdomen of the carcaſe, perceiv'd that there was an extravaſated humour in that cavity. It was a fluid blood, which had been effus'd to the quantity of about a pound and half: and ſome blood was alſo extravaſated into the bronchia. However, in the belly was a ſtrong ſmell, but not to a very great degree. The inteſtines were, in a great part of them, red in ſeveral places, eſpecially thoſe which lay uppermoſt in the abdomen; and the ileum had already begun to be livid. The peritonæum was mark'd with black ſpots, in ſeveral places, but particularly where it inveſts the diaphragm. But where it cover'd the ſtomach, which had a natural appearance on the internal part, it was unequal with black tubercles, rather than with ſpots. And theſe tubercles, although at firſt they had the appearance of glands, were in fact (for Valſalva himſelf ſhow'd them, and I ſaw ſome of them ſoon after) nothing elſe but a ſtagnating blood, or, if you pleaſe, rather the beginning of a gangrene.

3. When he had ſhown me theſe appearances, and, at the ſame time, related the caſe, as I have deſcrib'd it to you, I aſk'd him why he had neither preſcrib'd bleeding himſelf, nor approv'd of it when others preſcrib'd it? He anſwer'd, that he had no reaſon at hand, which would clearly ſatisfy me; but I have, ſays he, obſervation. For I have remark'd that blood-letting does not ſucceed well in inflammations of the bowels: and indeed I have even often obſerv'd, that patients, of themſelves, become exceedingly bad of a ſudden in that diſorder, and contrary to expectation, ſo that I am afraid to make uſe of any remedy of this kind, leſt the blame ſhould be laid upon the remedy, which ought to be laid upon the very nature of the diſorder.

What then, you will naturally ſay, when you read this, If any one is almoſt loaded with a quantity of good blood, if his conſtitution is ſtrong, and firm, and he be ſeiz'd with a very violent pain in his inteſtines, muſt we, upon the authority of Valſalva, omit to take blood from him? What is this but to ſuffer an inflammation to continue, which it would be eaſy for you to prevent? What! If the pain is from a convulſion, muſt we not endeavour to counteract this by bleeding, but muſt we even ſuffer the veſſels to be the more dangerouſly contracted, in proportion as they are more full? Softly, I beſeech you; for who has told you, that in ſuch a man as you deſcribe, Valſalva would not have immediately taken blood away? For it is quite a different thing, to open a vein before an inflammation is form'd, or even while it is beginning to be form'd, and eſpecially in a conſtitution of this kind, from what it is to take blood away when the inflammation is already form'd, when the ſtrength of the patient is diminiſh'd, and every thing is in a very critical ſituation; or in other words, to run the riſque, as Celſus ſays (*a*), "of ſeeming to have kill'd the patient, "who muſt have ſunk under his own ſevere fate." For the courſe of this diſeaſe is often more ſpeedy than we ſhould ſuppoſe; ſo that if you regard the hours, you would think it in its beginning, even at the time when it has done all the miſchief in its power, and is haſtening to its fatal concluſion: wherefore in this diſorder, if in any other whatever, that Hippocratic maxim (*b*) is true, *occaſio præceps:* for ſhort indeed is the opportunity of relief. There had been this opportunity in Lælius, during the firſt hours of his diſorder, when the philonium was raſhly, not to ſay to no purpoſe, advis'd. When Valſalva came to him, this opportunity was paſs'd, and ſtill more when the ſenior phyſicians were call'd.

4. For as to their thinking, from theſe very ſymptoms, by which Valſalva judged the young man to be overcome with the force of a diſorder, which was already become inſuperable, that he was oppreſs'd by a convulſion, which they believ'd to be as yet moveable; without doubt the ſucceſs of venæ ſection, ſhows plainly, which opinion came the neareſt to truth.

I confeſs, however, it cannot be denied, that in this diſorder convulſion has frequently a great ſhare, and this convulſion is ſo much the greater, in proportion as the pain is more ſevere, whether the pain excite the convulſion, or is excited by the convulſion, and alſo in proportion as it makes the greater ſpeed to its fatal termination. Thus I underſtand why Boerhaave (*c*) has accounted for the exquiſite ſenſe of the inteſtines, from their great number of nervous papillæ, and immediately adds: "wherefore perſons are very "ſoon deſtroy'd by inflammation, and excoriation of the inteſtines, and if "there be a very great violence of pain, the ſtrongeſt man is diſpatch'd in "the ſpace of a ſingle hour." But frequently, alſo, in a violent pain of the inteſtines, manifeſt marks of convulſion diſcover themſelves, even more than in Lælius (*d*).

Thus, not to mention here the horrid convulſions, that are deſcrib'd in an obſervation (*e*), which, whether you conſider the ſymptoms, or the diſ-

(*a*) De medic. l. 5. c. 26.
(*b*) Sect. 1. aph. 1.
(*c*) Prælect. ad inſtit. §. 91.
(*d*) De quo ſupra n. 2.
(*e*) Eph. n. c. dec. 3. a. 7 & 8 obſ. 145.

ſection,

ſection, certainly relates to the preſent ſubject; thus, I ſay, I remember a virgin in the place of my nativity, pretty far advanc'd in years, but of a ſtrong conſtitution, who was ſubject to a pain in the belly, which her ſenior phyſician did not doubt was a colic, and who, being ſeiz'd with the ſame pain, but more violently than uſual, about the end of the year 1709, yet without any ſymptoms of fever attending it, whether you conſider'd the pulſe, the urine, or any other marks, was very much eas'd by a glyſter, which had brought away a bilious matter, and her diſorder grew milder every day, ſo that ſhe was no longer viſited by her phyſician; I remember, therefore, that when the women, who attended the patient, had, inſtead of a glyſter, which had been injected every other day in the evening, introduc'd a ſuppoſitory of honey, ſhe was immediately ſeiz'd with ſo violent a pain in the anus, that in the morning no pulſe could be found: and that with this pain, was join'd ſo great a conſtriction of the anus, that a glyſter could by no means be injected: but ſoon after, when they endeavour'd to cure this contraction, and pain, by emollients, and anodynes, I remember that all of a ſudden, a relaxation of this part came on, juſt as it frequently does in bodies after death, and about noon, death itſelf.

Suppoſe then, that this diſorder was a convulſion. And will you ſuppoſe it could have been eaſily remov'd by blood-letting? What if ſuch a cauſe vellicate the nerves, as it is very difficult to overcome, or if it can perhaps be overcome, for a very ſhort time, it ſoon after attacks the patient in a more violent degree, as is frequently the caſe in convulſive diſorders? Attend to what happen'd when I reſided at Bologna. There was a monk, who was an old man indeed, but very ſtrong. This man was ſeiz'd, of a ſudden, without any evident cauſe, except, perhaps, from cold, and fatigue, with a pain in his belly, which was ſo violent that he could not ſtand in any one place, and was forc'd to cry out. Oil of almonds was given to no effect, glyſters were injected without the leaſt advantage, and blood drawn from the foot. No remedy being of any uſe, he died within twelve hours at leaſt, having gnaſh'd his teeth two or three times.

I do not write theſe things againſt blood-letting, which, if you uſe it in time, is a very uſeful remedy. But I put you in mind of what may ſoon happen, in diſorders of this kind, even after that remedy has been made uſe of, when very violent convulſions prevail: and this that you may know, yourſelf, and previouſly inform others, that an important remedy is not to be raſhly blam'd, if it happen that a fatal termination of the diſeaſe ſoon follow its uſe. But as, whatever previous admonitions are given, it is always a reproachable calamity with moſt perſons, if a ſpeedy death ſucceed a conſiderable remedy that has been made uſe of, you plainly underſtand why Valſalva was afraid of the uſe of remedies of this kind, in theſe diſeaſes.

5. But what if the diſſection of the body take away all excuſe from the phyſician? For a convulſion, although it does not return, may nevertheleſs have brought on ſuch a diſorder in the inteſtines ſuddenly, and contrary to expectation, by obſtructing the blood in the conſtricted veſſels, that during this conſtriction blood cannot be taken away with propriety. You have ſeen, in the caſe of Lælius, how ſoon the inteſtines had not only contracted an inflam-

5 mation,

mation, but a lividneſs likewiſe. No part perhaps, more eaſily, and ſooner, than the inteſtines, degenerates into a gangrene, and becomes black, without the phyſician's ſuſpecting any thing of that kind. Which, although I could ſtill more properly demonſtrate it by hiſtories that are elſewhere produc'd, or will be produc'd in this letter *(f)*; yet I will alſo ſhow here, by two obſervations that I receiv'd from my two preceptors, the one from Valſalva, and the other from Jacob Sandri. And firſt take this from Valſalva.

6. There was a man, who for ſome months, at leaſt, had been ſeiz'd every day, five or ſix hours after eating, with pains of the belly, as if he were torn by dogs. To this was added a flux of yellow matter, and a waſting of fleſh; when, of a ſudden, he was attack'd by an apoplexy, which was ſlight indeed, and after a day or two ſeem'd to remit, ſo that his hands recover'd ſome power of motion, and his ſenſes were leſs oppreſs'd: yet he died on the fifth day.

His body being examin'd, every thing appear'd to be ſound, if you except the brain, and the inteſtinum ileum. For in the ventricles of the former, was a large quantity of ſerum, from which the plexus choroides had become pale. And in the ileum were ſeven or eight annular ſpaces, and thoſe of a black hue: in which ſpaces were glands of the bigneſs of a vetch, and moſt of them fill'd with a white matter: theſe glands were not collected into heaps, nor plac'd on the internal ſurface, but were ſcatter'd abroad diſtinctly from each other, and were rather prominent betwixt the coats of the inteſtine.

7. The cauſe of the apoplexy, as it does not relate to the preſent ſubject, being ſet aſide, you ſee that the cauſe of the pains which recurr'd every day at a certain hour, conſiſted, without doubt, in the enlarg'd glands of the ileum, whether they, as Valſalva thought, by what he had ſeen in ſome other inſtances, could not bear the preſſure of the nutritous matter, as it paſs'd through the inteſtine, without pain; or were diſtended by the new chyle, which was unable to ſtruggle through the narrow paſſages of theſe glands, that were in part obſtructed: which both the nature thereof, that to Valſalva ſeem'd not unlike that of the glands in the meſentery, ſhow'd; and that white matter with which moſt of them were ſtuff'd up, in ſome meaſure confirm'd.

But what I would have you principally attend to here, is, how eaſily, and how ſoon, all theſe ſpaces, in which they were, contracted a blackneſs. But you will ſay that the apoplexy had increas'd the inertia of the fibres of the inteſtine, and prevented them from diſpatching the blood with ſo much celerity, through thoſe ſpaces, which were vitiated by the glands. I confeſs it: but a gangrene is not us'd to ſeize upon other diſeas'd parts ſo ſoon, when an apoplexy comes on. And certainly no apoplexy had preceded in the other obſervation, which Sandri related in the following manner.

8. N. Cupellini being afflicted with a colic diſorder, was ſitting down on a chair, and drinking an emulſion, when, all of a ſudden, he ſaid to his ſervant, who was ſtanding by him, take it, ſtretching out, at the ſame time, the glaſs which he held in his hand; and as he ſaid this, he fell backwards,

(f) N. 16. & 18.

and

and died in an inſtant. The whole body being examin'd by diſſection, no diſorder was found, beſides an inflammation of the inteſtinum colon, which inclin'd to blackneſs.

9. From this obſervation you not only ſee what I advanc'd, but alſo perceive what diſorder there certainly might be in the ſame inteſtine, in the virgin of Forli, alſo, of whom I ſpoke juſt now (*g*). And I would not have you be ſurpriz'd that there were no previous ſymptoms of a fever; as we are about to ſee in this very letter (*h*), whether there can be an inflammation without a fever, and even whether there can be a ſphacelus without an inflammation. But we muſt firſt conſider ſuch things as relate to the celerity, with which the inteſtines contract a fatal inflammation.

10. A certain running footman (that is to ſay he whom I have taken notice of in the fifteenth of the Epiſtolæ Anatomicæ (*i*), where I wrote other things of him, which I ſhall not repeat here) of a low ſtature, and a fat habit of body, being no longer able to do buſineſs as a ſervant, beg'd for his livelihood ſome years, and made very plentiful uſe of wine, when he could get it. Wherefore even on the laſt day of his life, when he came home, and ſaid that he was not well, he took nothing to cure himſelf but bread and wine, ſoon after which complaining of pains in the belly, he died with them about midnight. His body was brought on the day following into the college, where about the beginning of February, in the year 1736, I taught anatomy.

The muſcles of the abdomen, which were lax, being cut into, and the belly, from whence a very ſtrong ſmell proceeded, being laid open, I ſaw that a very conſiderable part of the ſmall inteſtines went down, to a conſiderable depth, into the lower part of the pelvis, ſo as to reach quite to the conjunction of the bladder with the rectum, filling up all the ſpace that was there. But that appearance had exiſted from the original formation of the body, or at leaſt was not recent. This however was recent, that theſe, and the other parts of the ſmall inteſtines, were, in ſome places, extremely narrow, and, at the ſame time, brown, but in other places red, even the ſmalleſt veſſels being ſo much diſtended from the ſtagnating blood, that it almoſt ſeem'd as if they had been fill'd with an injection of red wax. And the ſame appearance was ſeen in ſeveral parts of the large inteſtines, but eſpecially at the beginning of the colon. The edge of the liver was blackiſh. The ſpleen was larger than it naturally is. The trunk of the great artery, as it paſs'd through the belly, was not free from ſome little offifications. And the vena cava was fill'd with much fluid and black blood.

11. It is true it was not ſo ſhort a ſpace of time, in which the inflammation of the inteſtines carried off the woman, of whom I am to write next: yet it was ſhort, and perhaps ſhorter than it ſeems, if it were as certain when the inflammation began, as it is when ſhe firſt began to be diſorder'd at all. But although this is not ſo clear, yet the other remarks that I made upon this woman, I muſt not paſs over here, as I promis'd them when I wrote of

(*g*) N. 4.
(*h*) N. 19. & ſeq.
(*i*) N. 70. ad fin.

the palpitation of the heart (*k*), and of the pulſe (*l*), and even when I treated of the affections of the eye (*m*). For this is the old woman, whoſe diſorders I deſcrib'd in that place, only as far as they related to her eyes, and defer'd the remaining part of the deſcription to another occaſion.

12. A poor old blind woman, of a ſmall and ſlender body, having been ill for three days, was brought into the hoſpital at Padua, being ſuppos'd to labour under an inflammation of the thorax. For from the patient herſelf nothing certain could be learn'd, as ſhe was then very weak, and her pulſe ſo very low and ſmall, that ſhe was carried out dead, on the very ſame day ſhe had been brought in. This woman's body, as the time of the year was ſuitable, for it was about the beginning of the year 1742, was more uſeful than I expected, in order to demonſtrate many things to the ſtudents. And in the courſe of thoſe demonſtrations, I lit on theſe morbid appearances, which I ſhall take notice of.

In the belly the inteſtines were inflam'd, as the liver was alſo. And to the ſame cauſe it was to be aſcrib'd, that when the uterus was open'd, the internal ſurface of the fundus was of a colour not leſs red, than if the woman had lately menſtruated. But where the fundus contracted itſelf into the cervix, and the anterior and poſterior internal ſurfaces came together, and form'd an angle in the right ſide, a membrane proceeded from this angle, not very ſmall in its ſize, and paſs'd tranſverſly to the poſterior ſurface, univerſally cohering with that ſurface, on its inferior border, but being, in other reſpects, looſe and floating, ſo that, contrary to the uſual appearance of the valvulæ cervicis, it had its cavity turn'd upwards, and not downwards: for which reaſon I ſuſpected that this had not exiſted from the original formation, but had, perhaps, been the conſequence of a difficult birth; for it was certain the woman had brought forth children, and I ſaw the uterus inclin'd to the right ſide.

In the thorax the lungs were perfectly ſound. But the pericardium was, on all ſides, connected to the heart, by a univerſal, though not very firm coheſion, ſo that the two membranes, that is of the heart, and pericardium, could eaſily be disjoin'd from each other, by dividing theſe connections with the fingers, and without lacerating either. The pericardium did not adhere to the great veſſels: but on the ſurface, by which it had adher'd to the heart, appear'd a certain white ſpot, only in one place, and that extending itſelf to a ſmall breadth only. In the ventricles of the heart was ſome blood which was black, as indeed the blood was every where, but there were no polypous concretions in theſe cavities. Yet in other parts of the body theſe concretions were found, round in their figure, and white, and ſome thick, firm, and long, as thoſe were which went from the right auricle, to the internal jugular veins, and thoſe, alſo, which were produc'd from the orifices of the heart into the arterial veſſels. Finally, what appearances were found in the eyes, I have already ſaid in that letter which was laſt pointed out.

13. Although the hiſtories which I have hitherto given you, ſhow how ſoon pains of the inteſtines may, ſometimes, become fatal, either by the force of inflammation, or even of convulſion; and conſequently, how cautious a phy-

(*k*) Epiſt. 23. n. 21. (*l*) Epiſt. 24. n. 12. (*m*) Epiſt. 13. n. 17.

ſician

ſician ought to be, and even ſuſpicious, during the violence of this diſeaſe: yet that he ought to be much more cautious, and ſuſpicious, leſt he ſhould, at any time, be deceiv'd into a vain hope by the ſeeming remiſſion, and, as it were, departure of this diſorder, the following obſervations will ſhow you.

14. A young man who was much given to the uſe of wine, and ſpirituous liquors, as they are call'd, having labour'd under an intermitting fever, not long before, was ſeiz'd with a pain of the belly, which a diſcharge of flatus, downwards, remov'd. However, after ſome days, the pain return'd again; which not being able to get rid of at home, he was, at length, receiv'd into the hoſpital of St. Mary de Vita at Bologna, on the ſixth day after the return of his pain. The pain was continual in the hypogaſtrium, but ſlight, except that it now and then increas'd, and the belly was often, at theſe times, more ſwell'd in that part, and if you applied your hand to it, you perceiv'd many hard globules, as it were, ſeated in that region. But all theſe ſymptoms ſoon vaniſh'd; yet return'd again, at intervals. The ſtomach alſo was painful, and he now threw up all his aliments by vomiting, as well as his medicines, among which was even opium itſelf.

Wherefore, as the inteſtines diſcharg'd none of their fæces, but by means of glyſters, it was determin'd to pay a regard to this circumſtance and, at the ſame time, to inject ſomething of a curative and nutritious nature in the glyſters, as broths, for inſtance, and decoctions of emollient herbs, but this was done without any alleviation of the pains, ſo that no excrements were brought away, before linſeed oil had been more than once thrown up. Unctions of the belly with the ſame oil, and others, were, alſo, tried without effect. The patient bore the pain better when he ſat up in the bed, than when he lay down, for which reaſon he ſat up even when he ſlept. He was alſo better, and ſlept better, with an empty ſtomach, than if he happen'd to keep any thing down: which circumſtance, and the abſence of ſome other ſymptoms, that frequently ſhew the exiſtence of worms, made us ſuppoſe that the pain did not ariſe from worms, notwithſtanding he had thrown up one very long, and round worm, from his mouth, three days before.

At laſt he began to retain ſome of his nouriſhments, and even his dinner alſo. His cheeks were red, which he himſelf ſaid was owing to a defluxion of humours on his face, to which he had been ſubject. He was thirſty. His abdomen was univerſally diſtended. It was now the fifth day from the time of his coming into the hoſpital, and I ſpoke to him, as uſual, about the ſixteenth hour, for the winter of the year 1703 was coming on: he ſaid that he was a little better, which was confirm'd by his countenance, and alacrity of ſpeech, and by a more firm vigor of the body, in ſitting; for the pulſe never had had any diſagreeable ſymptom, nor had even then: at leaſt there was no fever, nor could any ever be obſerv'd, during the whole courſe of his being in the hoſpital, except, perhaps, once. And from this ſtate of the diſorder who could have ſuppos'd that any thing ſo fatal was at hand? Yet ſcarcely two hours had paſs'd, from the time that I, and the ſtudents who ſaw him with me, had made theſe obſervations, when he began, of a ſudden, to cry out from a ſeverity of pain, and that continually even to the ninth hour of the night. In the mean while he had a vomiting, and in the evening he himſelf gave notice that his pulſe could no more be felt, nor indeed could it

be perceiv'd, by thoſe who were preſent. When it was the ninth hour, to which time, as I ſaid juſt now, his pain continu'd, he ſaid that he muſt get out of bed, in order to have a ſtool. And while he was about this buſineſs a ſwooning came on, and he died, in this manner, within half an hour.

While his body was waſh'd, on the day following, a great quantity of putrid blood, as it were, flow'd out of his mouth, diluted with a ſtercoraceous fluid, of the colour of tobacco, and ſmelling very ſtrongly. And by this means the abdomen became ſomewhat flaccid in the hypogaſtrium: and although in the epigaſtrium, which was livid, and in the other parts, it was ſtill hard, and diſtended, yet it was leſs ſo than it had been in the living body. When the knife penetrated to the cavity of the belly, a great quantity of fluid immediately burſt forth with an impetus, being ſimilar to that which had flow'd from his mouth; and it burſt forth in ſuch a manner, that it was doubtful, not only to us who ſtood by, but even to the perſon who perform'd the diſſection, whether it came from the cavity of the abdomen, into which it had been before extravaſated, or from the diſtended inteſtine, which, in conſequence of its diſtention, might eaſily be wounded together with the peritonæum.

However, ſoon after, when the abdomen was fully laid open, the cavity thereof appear'd to be full of that humour. The ſmall inteſtines were all as black as a chard-coal. And the ſpleen, alſo, was affected, or at leaſt in part, with the ſame ſphacelus. Yet the ſtomach, as far as could be judg'd from the external appearance, was ſound, and all that part of the large inteſtines, likewiſe, which goes from the termination of the ileum, to the left hypochondrium: for we were prevented from inquiring into other appearances, by the almoſt inconceivable ill ſmell; which was ſo much the greater, as through negligence, and haſte, the inteſtine had been perforated, whereby the filthy proluvies was increas'd, with which a round worm, of a moderate ſize, had alſo come out.

15. You have ſeen how much diſorder there was in all the ſmall inteſtines, when the young man ſeem'd to be better. But do you imagine this miſchief was done before he came into the hoſpital, or afterwards? If before, then of courſe this very great diſorder lay hid for five days, without thoſe ſymptoms which generally attend upon a ſphacelus. And if you ſuppoſe it to have happen'd afterwards, how did it all come on without ſigns of inflammation, and particularly without a continual fever? And ſuppoſe that almoſt the ſame queſtions may be aſk'd you by me, when I produce the obſervations which follow, or when you read that of Segerus, which is extant in this fourteenth ſection of the Sepulchretum (*n*). That is to ſay, an old man after having complain'd, for ſome days, of pains in the belly, to which he was ſubject, yet not ſo violent, as to confine him to his bed, at length returning home about evening from his garden, his pains became ſo violent, that no remedies were of ſervice to him, and he died, on the following day, about the fourth hour in the morning: and indeed other diſeaſes of long ſtanding were found in the pancreas, the liver, and the ſpleen; but this one was recent, that

(*n*) Obſ. 6.

" the

" the inteſtines, particularly the ſmall ones, and the colon, were very " black."

Is it poſſible then that all this miſchief could happen within a few hours, from the time that Segerus had found the pulſe to be ſomewhat more quick than uſual? But in regard to this I will alſo conſider below (*o*). At preſent, to return to our young man, if it had been certain that the very fœtid colluvies, which I have mention'd, had been previouſly effus'd into the cavity of the abdomen, by a rupture of the inteſtine while living, and not from a wound of the inteſtine after death, as we had ſome reaſon to ſuſpect, we ſhould then conjecture that the ſwooning, and death which was the conſequence of it, had probably happen'd at the time when in the ſtrainings to diſcharge the fæces, he had broken through ſome rotten part of the diſtended inteſtine. For Wepfer, alſo, as you will likewiſe read in this ſection of the Sepulchretum (*p*), ſpeaks of " the inteſtines being ruptur'd, and all the ſordes extravaſated into " the cavity, with the ſudden death of the patients." Which, however, does not always neceſſarily follow, as two obſervations in the ſame ſection of Fernelius (*q*), and Riverius (*r*), jointly demonſtrate: and the ſame may be gather'd from one of ours deſcrib'd in the former letter. But whether thoſe which you read in the Commercium Litterarium (*s*), and in the Acts of the Cæſarean Academy (*t*), belong to one, or to the other claſs, I leave to your own prudence to determine. To the former claſs, however, belongs that which was lately given us by the celebrated Galeati (*u*); ſo ſuddenly was the man carried off by tormina of the inteſtines, and ſo full of excrements was the abdominal cavity, likewiſe, found, which had been diſcharg'd from the ruptur'd inteſtine.

But now let me give you a lamentable hiſtory, in which the pains had not only remitted, but entirely gone away.

16. A ſlender woman of a ſhort ſtature, and of a bilious temperament, as it is call'd, being about forty years of age, and having been a widow for three years, was accuſtom'd to ſpit blood now and then, which ſhe attributed to having been without her menſtrua, for eight years paſt, though to me it ſeem'd that this blood came from the larynx rather than from the lungs, when, at length, from anger, and uneaſineſs of mind, ſhe was ſeiz'd with a pain, on account of which ſhe was oblig'd to come into the hoſpital of St. Mary de Morte, at Bologna, about the beginning of March, in the year 1706. This pain ſeem'd to be from the cutting of knives, as it were, firſt below the left breaſt, from which ſeat it extended itſelf, afterwards, without quitting it, to the part below the right breaſt, where it was more ſlight however, ſo as to ſuffer the patient to lie on that ſide. For it increas'd from the part being touch'd: and made reſpiration difficult. It had begun with a febrile rigor, which recurr'd every day; but the fever did not intermit. The face was red: the thirſt was troubleſome; but the cough ſtill more ſo, as it exaſperated the pain. The ſpitting was frequently bloody, at other times white, thick, and frothy. There was often a ſenſation as if of ſomething

(*o*) N. 19. & ſeq.
(*p*) In addit. obſ. 3.
(*q*) 23 & 21. §. 4.
(*r*) N. 9.
(*s*) A. 1742. hebd. 45. n. 2.
(*t*) Tom. 8. obſ. 47.
(*u*) Comment. de bonon. ſc. acad. tom. 3. inter medica.

aſcending

aſcending to the throat. And, finally, there was a pain about the navel, juſt as if dogs were tearing that part. The belly was lax.

Blood was taken from the foot: and other remedies, which were ſuppos'd to be ſerviceable, were adminiſter'd. After a few days, without any previous critical evacution, all the ſymptoms were grown ſo much milder, that the phyſician pronounc'd the patient already well. In conſequence of this ſhe got out of bed: but her ſtrength ſoon failing her, ſhe was preſently oblig'd to return to her bed, where ſhe was found contracted into herſelf, as we generally are from cold, and without any pulſe. She was aſk'd whether ſhe felt any pain in the thorax, or belly, to which ſhe anſwer'd in the negative. On the ſame day ſhe began to diſcharge a fœtid blood by ſtool. She was afterwards delirious: and convulſive ſtartings of the tendons diſcover'd themſelves in the wriſts. Being much weaken'd by theſe ſymptoms, ſo that ſhe was no longer able to ſpeak, ſhe died on the ſixteenth day from the beginning of the diſorder.

The abdomen which had ſubſided, being cut into, and laid open, a fœtid ſmell was diſcharg'd, ſuch as generally comes from a gangrene, but mix'd with that odour, which where there are worms ſeems to be emitted from an acid matter as it were. Nor indeed were round worms wanting in the ſmall inteſtines, all of which, from a red colour, inclin'd to a livid and blackiſh hue. The ſame morbid lividneſs occupied the flat ſurface of the liver, on the lower part of it, and penetrated pretty far into its ſubſtance. The pancreas being become thicker than natural, conſiſted of indurated globules, as it were. The liver, alſo, was ſomewhat hard, and the gall-bladder was diſtended with calculi, to the number of a hundred and twenty, which were contain'd in a paliſh bile.

The largeſt of theſe, which were about twenty in number, were equal to the bigneſs of a filbert. Other circumſtances relative to theſe calculi, I have deſcrib'd in the Adverſaria, in the firſt place (*x*). Where (*y*) ſomething is alſo ſaid of the ſituation of the uterus in this widow, which was ſo drawn to the right ſide of the pelvis, by the round ligament being ſhorter than uſual, that the middle of the pelvis was without a uterus. Moreover, where the tube emerg'd from the uterus, on the left ſide, was a prominent puſtule, turgid with a white pus, equal in ſize to a lupin; and the ſubſtance of the uterus, which the puſtule had hollowed out, appear'd to be black after the puſtule was open'd, and the pus diſcharg'd. The tubes contain'd a matter which was not white, but of a fleſhy colour degenerating into yellow. The teſtes were contracted, and had a few veſicles within them; and the coat of one was almoſt cartilaginous.

On opening the thorax, we found the lungs, on their anterior ſurface, connected in a few places to the pleura by membranes, but in other places free, and ſound alſo, if you except the anterior part of the right lobe, the ſubſtance of which was ſomewhat compact, but not very hard. There was no moiſture in the pericardium: but in the right ventricle of the heart, which was flaccid, and at all the orifices of that viſcus, were ſmall polypous concretions.

(*x*) III. animad. 28. (*y*) IV. animad. 25.

As

As to the parts of the pharynx, from whence the bloody ſpitting had proceeded, I have ſpoken of theſe in the Epiſtolæ Anatomicæ (z).

Finally, when the head was ſever'd from the neck, a ſmall quantity of water iſſued forth, through the great foramen of the occiput: and ſome water was alſo found under the pia mater, when the cranium was open'd, particularly on the right ſide. In the lateral ventricles of the cerebrum was a reddiſh ſerum, and the plexus choroides were unequal, with a great number of hydatids, which were eaſily broken through by touching them. From the ſections of the medullary ſubſtance, where ſome bloody points were diſcover'd, a greater quantity of blood was preſs'd out than there generally is. From this cerebrum, as alſo from the tongue, the pharynx, and even from the very eyes themſelves, which I diſſected, the ſame kind of odour of worms was perceiv'd, that I ſpoke of in the belly.

17. If you ſet aſide what relates to the delirium, to the convulſions, to the ſpitting of blood, to the pains of the breaſt, and the other diſorders, which are not the objects of our preſent inquiry, and only conſider the pains of the inteſtines; you will eaſily conceive, that when theſe as well as the other ſymptoms, had ſo greatly remitted, without any critical evacution preceding, that the woman was ſuppos'd to be recover'd, nor ſhe herſelf longer felt any pain, the inteſtines had then begun to grow livid, and black, which the diſcharge of a fœtid blood by ſtool, beginning on that very day, to ſay nothing of the aſphyxia, join'd to demonſtrate.

Nothing in the whole practice of medicine, ought more to be ſuſpected than the ſudden vaniſhing of pain contrary to our expectation. I remember that the very ſagacious, and experienc'd phyſician, Peter Molinelli, whom I have commended in the life of Valſalva, related to me a recent obſervation of his, to the ſame effect. A young man of a melancholic temperament, was ſeiz'd with an acute fever, with an inflammation of the jaws, and a delirium. About the fourteenth day all the other ſymptoms, beſides the fever, left the patient, but that continu'd, and was conſtant; and although the patient perſpir'd plentifully, and made a good deal of water, yet the fever, except that it ſeem'd to have been abſent for one day, ran on quite to the thirty-fifth day. As Molinelli ſuſpected, from the obſtinate perſeverance of the fever, even after ſo great a diſcharge by ſweat, and urine, that ſome very conſiderable diſorder was lurking beneath it, behold without any previous irregularity of the patient, or the attendants, an æruginous diarrhœa ſuddenly came on, which was attended with a pain a little above the region of the bladder. And as theſe ſymptoms came on ſuddenly, ſo they as ſuddenly vaniſh'd.

Then indeed the phyſician began to fear ſomething very violent, and not without reaſon. For the whole abdomen was harden'd to an incredible degree, with a ſenſe of internal heat, and, when you touch'd it, even of pain: at the ſame time there was no pulſe, a delirium came on, a difficult reſpiration, and, without ſigns of convulſion, death within the third day, from the time the abdomen had grown hard. And although he was ſurpriz'd, how an inflammation could ariſe from blood, which was effete, as it muſt neceſſarily be, after a very long, and violent illneſs; yet that it was ariſen he did not doubt;

(z) IX. N. 14.

and

and I did not doubt but a gangrene had ariſen alſo. But what it was not poſſible compleatly to aſcertain, by reaſon of the liberty of opening the body of this young man being denied, it was poſſible to aſcertain in a woman of the firſt rank, whoſe hiſtory being communicated to me by one of her phyſicians, ſhould not be paſs'd over here, as it was very much like thoſe which are deſcrib'd above.

18. A very great princeſs of fifty-four years of age, who was not fat in her limbs, but very fat in her belly, in whoſe pulſe it was remarkable, that after every two laudable ſtrokes, immediately follow'd as many ſtrokes that were low, and of unequal celerity, having ſeem'd to be recover'd from a very violent pain of the inteſtines, which drew the bladder into conſent, and prevented the power of making water, was, a very few days after that pain had left her, ſeiz'd with a diarrhœa, by which ſtools of a black colour were diſcharg'd, and ſoon after with death.

The belly being open'd, ſome of the inteſtines, and the ſtomach, were found to be affected with a gangrene; the gall-bladder was dry, and in it was a calculus of the bigneſs of a ſmall pear: in the kidnies were rather granules of ſand than calculi. In the thorax the heart, and pericardium, were over-loaded with fat.

19. Whether this oppreſſive quantity of fat, or even ſomething hereditary, as thoſe things which I remember to have read, formerly, of the king her father, ſeem to prove, was the cauſe of that inequality of pulſe, I ſhould at leaſt think that the gangrene of the inteſtines was to be attributed rather to the foregoing inflammation, when the pain troubled her, than to the diſcharge of atra bilis, as it is commonly call'd, by ſtool. For this diſcharge had not infected the ſtomach; and in the widow of whom I ſpoke juſt now (*a*), black ſtools preceded her death, which did not conſiſt of atra bilis, but of putrid blood.

Yet it is not very probable, you will ſay, that many experienc'd phyſicians, and eſpecially ſuch as are generally call'd upon to attend princes, did not diſtinguiſh an inflammation, nor the degeneration thereof into gangrene. And as it is my cuſtom to judge of others, and particularly in a diſorder which I did not ſee myſelf, as I would have others judge of me, I will here, alſo, preſerve my cuſtom of accuſing nobody raſhly; and unleſs you diſſent, I will ſay that this gangrene came on without any previous inflammation. And this I ſhall do under the countenance of a great authority, I mean of Fernelius (*b*), who, after a very violent pain, ſaw "the extremity of the foot "ſuddenly ſphacelated, without any conſpicuous redneſs, ſo that the patient "was, at length, carried off without any fever, without any very violent "ſymptoms." Although therefore, "the greater part of phyſicians think "that ſphacelus is the indiviſible conſequence of violent inflammation," yet from conſidering ſeveral obſervations, which are very ſimilar to that of Fernelius, Frederic Hoffmann has expreſsly ſaid (*c*), "wherefore there is no rea-"ſon to doubt, but the ſame thing may happen internally, in the viſcera, "alſo, without a previous inflammation."

(*a*) N. 16.
(*b*) De abdit. rerum cauſ. l. 2. c. 15.
(*c*) Diſſert. de morb. hep. ex anat. deduc. §. 19.

But if you want inſtances in the inteſtines themſelves, you may read over again the obſervation of Segerus (*d*): or rather, as in his obſervation there was a very violent pain obſerv'd, and a very quick motion of the artery, turn to another of Frederic Ortlobius (*e*), which is alſo to be met with in the Sepulchretum (*f*): you will find that the inteſtines were "livid, black, and "ſphacelated," on the right ſide, and that, as Ortlobius himſelf wonders at in the ſcholium, "without previous pains of the belly, and without a pre-"vious manifeſt fever."

20. Yet even as in the patient of Ortlobius, "obſcure pains" of the belly had preceded; and as there is nobody who can aſſert of him, as Fernelius did of the foot of the other, whom I ſpoke of juſt now; or who can aſcertain, as in the external parts in general, that a "conſpicuous redneſs" had not preceded, in the viſcera alſo, you will not deny that a ſphacelus of the inteſtines may, ſometimes, happen, without any inflammation preceding; but will at the ſame time enquire whether it may not, ſometimes, ſucceed to an inflammation, the principal, and common, ſymptoms of which do not appear.

Not to recede from the Sepulchretum, turn, I beſeech you, to the obſervation of Riverius (*g*), in this very fourteenth ſection. The inteſtinum ileum, you will find, was affected about its termination, together with the portion of the meſentery that was join'd to it, with a gangrene, and even with a ſphacelus, in a patient who having labour'd under a pain of the inteſtines, on the firſt day of his diſorder, which was protracted to the thirteenth day, but "being free from pain, and from fever," on the ſecond day, caus'd great doubts and difficulties to ariſe among the phyſicians, on the third and the following days, as "the fever which came on after the ſe-"cond day, together with a thirſt, and dryneſs of tongue, ſeem'd to give "proofs of inflammation; but they could not conceive how an inflamma-"tion could exiſt in the inteſtines, without pain."

Shall we ſuppoſe then that the ſphacelus happen'd on the firſt day? If ſo, we muſt, alſo, ſuppoſe that the patient liv'd in this ſtate, for the ſpace of twelve days. And can this be ſuppos'd? Or how could it happen, that after the ſphacelus was form'd, a fever, which did not exiſt before, and a dryneſs of tongue, came on? For you will ſee in the preceding letter, that the pulſe of an old man (*b*), was, from a febrile ſtate, chang'd at length to the appearance of a healthy ſtate, and that the tongue, from a dry ſtate, was become moiſt, although in his body after death we found a part of the inteſtines ſtill red, and another part livid, black, and occupied with a gangrene, which were pretty ſure marks that this part had very lately paſs'd from inflammation, to gangrene. But as to pain, other letters of mine teſtify, that inflammation of the inteſtines had exiſted without it.

For to take no notice that in the twenty-ninth (*i*), the inteſtines are not ſaid to have been troubled with any pain, notwithſtanding they were univerſally inflam'd to a great degree; as I ſuppos'd this to happen on account of

(*d*) Vid. ſupra n. 15.
(*e*) Eph. n. c. dec. 1. obſ. 143.
(*f*) L. 3. ſ. 1. obſ. 11.
(*g*) Obſ. 21. §. 4.
(*b*) N. 25.
(*i*) N. 10. 11.

their being paralytic: they certainly were not paralytic in other patients, as, for inſtance, in the two who are ſpoken of in the twenty-firſt letter (*k*), and yet, although the inteſtines were found to be inflam'd, no complaint had been heard of pain being therein. And to mention a patient whom you may more eaſily call to mind, a woman was deſcrib'd in the preceding letter (*l*), whoſe ſmall inteſtines were red in the chief part of them; yet they had ſeem'd to be pretty free from pain. And indeed the other principal ſymptom of inflammation, which is fever, had never been obſerv'd in this woman, through the whole courſe of the diſeaſe: and in the porter, whoſe hiſtory was given a little after hers (*m*), the fever, whether you attended to the pulſe being not very frequent, or the fleſh not hot, was ſlight; yet the inflammation was not ſlight; ſo that there was no room in him, and much leſs in the woman, for the opinion of Ballonius (*n*), though in other reſpects to be commended. Who after having ſaid "it was natural to ſuppoſe, that "a conſiderable fever muſt be the conſequence of internal inflammations;" yet immediately adhering to the opinion of Galen, "who taught that in-"flammations of the internal parts muſt be very great, in order to bring "on an acute fever," he ſays this, if there be a "ſlight inflammation an "ardent fever does not come on."

21. And all theſe things being conſider'd, when together with the other ſymptoms of inflam'd inteſtines, you find a violent pain, and an acute fever, attending the patients, you will deſervedly, and with juſtice, give credit to thoſe medical writers, who have plac'd theſe two appearances among the principal ſymptoms of great inflammation, in the inteſtines. Yet if you, at any time, find that one, or both, of theſe are not preſent, or but in a ſlight degree, you will not immediately ſuppoſe, either that there is no inflammation, or that it is but ſlight, and that a gangrene, and ſphacelus, cannot exiſt in the inteſtines of thoſe perſons, in whom you do not ſee that theſe two ſymptoms have preceded. It were much to be wiſh'd, I confeſs, that phyſicians when they have recounted the ſymptoms of this inflammation, and of a gangrene that is the conſequent of it, would not omit this monitum in a diſeaſe, which by a deceitful appearance of this kind, frequently brings on a ſwift and ſudden deſtruction. ſay frequently. For I remember, when with ſurprize I related to Valſalva, and Albertini, the caſe of the young man which I dedeſcrib'd to you above (*o*), that both of them, immediately, affirm'd nearly the ſame thing to have happen'd to them, more than once.

At which time Albertini inculcating upon me, that it was neceſſary to watch, and be cautious, in pains of the inteſtines: for that he after ſlight pains, or at leaſt with thoſe which were by no means conſiderable, without any manifeſt fever, without any convulſion, without any vomiting, when both the internal, and external, ſenſes were vigorous, and ſtrong, had ſeen patients fall very ſuddenly into the utmoſt danger, and be ſoon ſnatch'd away by a latent inflammation of theſe viſcera, degenerating into an unexpected ſphacelus; I ſay Albertini inculcating theſe things upon me, I aſk'd of that very attentive phyſician, and diligent obſerver, from what ſigns then

(*k*) N. 9. & 17.
(*l*) N. 11.
(*m*) N. 18.
(*n*) L. 1. Conſil. med. 112.
(*o*) N. 14.

we

we might judge of the danger which threatens, and be able to foretell it at leaſt. He anſwer'd, from the pulſe, the abdomen, and the face. For the pulſe is low and rather weak, and if you attend to it cloſely has ſome little irregularity, which makes it not quite ſimilar to itſelf: and the abdomen is tenſe, hard, and attended with ſome pain: and, finally, the face has ſomething unuſual in its appearance, though different in different perſons, ſo that ſometimes I have obſerv'd the eyes to look as if the patient were frighten'd, at other times there has been a kind of lividneſs about the lips; and theſe, ſaid he, are the moſt general appearances that it has happen'd to me to meet with, in caſes of this kind; yet I have ſometimes alſo obſerv'd a morbid appearance of the tongue, and a kind of thirſt.

Thus it was that he pointed out the ſymptoms, with that ingenouſneſs which was natural to his character. And the truth of his remarks has been prov'd to me by the caſes of many, but particularly by that of Thomas Aleotti, a fellow-citizen of mine, who was equally eminent on the account of his noble family, and the probity of his manners. For he being confin'd to his bed, after certain pains of the belly, to which he was ſubject, and not recovering with the ſame degree of quickneſs, that he had been accuſtom'd to recover with, his phyſician was ſent to me about evening, in the autumn of the year 1711, if I remember rightly, when I was prevented from going abroad by a ſlight diſorder, to conſult me upon the caſe: this phyſician having told me that the patient was attended with ſome of thoſe ſymptoms, which I mention'd juſt now, and having found out, by the queſtions I aſk'd him, that others were not wanting, I deſir'd him, quite contrary to his expectation, to return to the patient, and if he obſerv'd him to be grown never ſo little worſe, to take care to inform the people about him, that a very conſiderable danger might be at hand, and that the patient might ſettle all his affairs reſpecting both himſelf, and his family.

You will naturally inquire what was the event? Why a very few hours after, the patient having begun to grow manifeſtly worſe, and having immediately done thoſe things, of which he was at length admoniſh'd, this excellent man was ſnatch'd away by a ſpeedy death, within the courſe of that very night.

22. But as the nature of medicine is ſuch, that the ſame things do not always anſwer in the ſame degree, I would have you make uſe of what I have ſaid in ſuch a manner, as, if at any time you ſee the greater part of theſe ſymptoms, which I have mention'd, come together, to be at leaſt ſuſpicious of the conſequences, and obſerve the ſucceeding ſymptoms with great caution and attention. And in the mean while, perhaps, it will not be altogether without advantage, if you compare with the obſervations, which are written in this and the former letter, on the one hand, the greater part of the ſymptoms recounted by Albertini, and on the other hand, thoſe which are generally given by phyſicians, in order to diſtinguiſh the inflammation of the inteſtines. Albertini had obſerv'd the pulſe to be low, and rather weak, ſuch as you will find it to have been, in general, in the foregoing letter, under number nine, eleven, eighteen, and twenty-five, and in this, under number two, to ſay nothing of the aſphuxia, which was at laſt obſerv'd in the ſame caſe, and under number fourteen, and ſixteen. He had alſo obſerv'd the abdomen to be tenſe and hard; the face and eyes to have ſomething unuſual in their appear-

ance: of which circumſtances, you will find what has been obſerv'd under all the numbers mention'd above, except the eleventh, and ſixteenth, where nothing is ſaid upon the ſubject.

Medical writers, indeed, agree in the tenſion of the abdomen. But they add many other ſymptoms which prove, beyond a doubt, the inteſtines to be inflam'd; yet they mean that evident inflammation, which all may eaſily aſcertain, and not this obſcure diſorder which we now ſpeak of, and which very few ſuſpect. Among theſe ſymptoms are, particularly, an acute fever, and a violent pain: without which, however, I have ſhown, above (*p*), that this inflammation has exiſted. Beſides, in regard to the fever itſelf only, I would have you read the obſervation written by the celebrated Roſa (*q*), and you will find, "that the whole inteſtinal ſyſtem was in-"flam'd, and gangrenous," and yet, "that in the whole courſe of the diſ-"eaſe, not the leaſt increaſe of celerity in the pulſe could be obſerv'd, nor "any febrile motion."

This author, alſo, deſcrib'd a peculiar caſe, in the year 1745. But before this; not before the obſervations of my preceptors, and mine; the celebrated Simpſon had publiſh'd thoſe things, which gave the illuſtrious archiater, Van Swieten (*r*), a proper occaſion of commending him, and confirming the opinion in thoſe words, which, although you will ſee them repeated by more than one of our Italian writers, in the years laſt paſt, it will, nevertheleſs, not be foreign to the purpoſe to quote on the preſent occaſion: "Simpſon has given us a caution, which muſt prove very ſalutary, and "uſeful, in the practice of medicine, and tend to prevent thoſe practitioners "from being deceiv'd, who ſuppoſe that there can be no inflammation, where "there is no fever. Whereas an inflammation often produces fix'd pains of "the inteſtines, and ſtomach, although no fever can be obſerv'd by the ex-"amination of the pulſe." You ſee this very experienc'd man ſays, that the caſe happens "often;" ſo that he does not doubt but this is "a caution, "which muſt prove very ſalutary, and uſeful, in the practice of medicine." And this was what I myſelf, in the year 1703 (*s*), wonder'd ſhould have been omitted, by thoſe phyſicians that I have at preſent in my eye, who had taught us the ſymptoms of inflammation of the inteſtines, as they had of all other diſorders. Thus far then as to fever.

But in reſpect to pain, it muſt be added, at preſent, that it is ſuppos'd, by the ſame phyſicians, to be join'd with a ſenſe of pulſation, and of conſiderable heat, ſuch as you will find in none of our obſervations; and you will even read one (*t*), in which, when I expreſsly enquir'd after a ſenſe of pulſation, and heat, the exiſtence of both one, and the other, was particularly denied. In many, (*u*) you will rather find the pain to be ſo deſcrib'd by the patients, as if dogs were gnawing them.

By the ſame writers it is alſo ſuppos'd, that there is obſtinate coſtiveneſs, and continual vomiting, eſpecially if the ſmall inteſtines are inflam'd, ſo that the excrements are, at length, diſcharg'd by the mouth. But you will certainly find nothing of this kind, by reading, over again, what is ſaid above (*x*),

(*p*) No. 20.
(*q*) Act. n. c. tom. 8. obſ. 47.
(*r*) Comment. in Boer. aph. §. 371.
(*s*) N. 14. & 21.
(*t*) Epiſt. 34. n. 9.
(*u*) Ibid. & n. 18 & 25. & in hac epiſtola, n. 16.
(*x*) N. 10. 12. 16.

of

of the ſervant, the old woman, and the other woman at leaſt: nay, the latter had even a laxity of the inteſtines. Thirſt alſo you will in vain ſearch for in many: I do not mean that ſlight thirſt which Albertini has ſometimes obſerv'd, but that which they call very troubleſome, and which they ſay is the natural attendant of an acute fever. I omit other things, for it is not my intention to refute writers, whom I greatly eſteem; but only to ſhow that thoſe ſymptoms which are deliver'd as the principal arguments of inflam'd inteſtines, are not always to be depended upon, as they are not always preſent, where this inflammation exiſts.

23. However, I cannot ſufficiently, and according to their merits, commend thoſe gentlemen, for admoniſhing us that the inflammation of theſe viſcera, eaſily, and frequently, degenerates into gangrene, and ſphacelus, and that this may be argu'd from the ſudden departure of the pain. Without doubt it is from the ſame cauſe, that if this happen in a dyſentery, the patients are ſoon carried off, when they themſelves, and thoſe about them, are leſs apprehenſive of it. You have in this third book of the Sepulchretum, and in the eleventh ſection, an ingenuous confeſſion of Drelincurt (*y*), which is worthy of Hippocrates himſelf: for Drelincurt "being rejoic'd" on account of the pains of a dyſenteric patient having vaniſh'd away at once, had reaſon to repent of his joy three days after, when the patient died without pain, by reaſon of the viſcera being "blaſted," or, in other words, ſphacelated to a ſurprizing degree. And when I wrote to you, on another occaſion (*z*), I conjectur'd it to have happen'd from a ſphacelus of the inteſtines, that in the laſt days of a dyſentery, and of life, the fever has even ſometimes ſeem'd to be gone off; and in this (*a*), and the former letter (*b*), I have ſhown what not only the ceſſation, but the remiſſion alſo, of theſe, or other ſymptoms, when they happen contrary to our expectation, may be ſuppos'd to be arguments of.

Yet take care how you believe, on the other hand, that in thoſe patients, in whom there is a ſphacelus of the inteſtines, the pains always ceaſe, as you are taught the contrary by the hiſtory of the young man (*c*), who, though he was oblig'd to cry out inceſſantly, with excruciating pain, for the laſt fifteen hours of his life, nevertheleſs had the greateſt part of his inteſtines black, to as great a degree as can be conceiv'd. For the part which yet remains ſound, a dreadful inflammation, or ſome other cauſe, may, in the mean while, excruciate; as, for inſtance, a convulſion, or what we obſerv'd in that young man, and frequently in others, who labour'd under the ſame diſorder (*d*), I mean inteſtinal worms.

But whether it happen'd accidentally, or becauſe deprav'd, and irritating, remains of the chyle are the conſequents of a depravity in the bile, that others (*e*), as well as myſelf (*f*), have found calculi in the gall-bladders of ſome of theſe patients, I leave quite undetermin'd.

However, diſcharges of black matter by ſtool, when join'd with a ceſſation of the pain, as I have taken notice of above (*g*), are with great juſtice, and

(*y*) In addit. obſ. 4.
(*z*) Epiſt. 31. n. 26.
(*a*) N. 14. 16. 18.
(*b*) N. 15.
(*c*) Supra n. 14.
(*d*) Supra n. 16. & epiſt. 34. n. 9. & 33.
(*e*) Vid. obſ. 47. cit. ſupra ad n. 22.
(*f*) Epiſt. 34. n. 15. & ſupra n. 16. 18.
(*g*) Num. 11.

pro-

propriety, plac'd in the number of the moſt alarming ſymptoms, and thoſe which ſhow death to be near at hand: and to this we ſhould alſo add, that which I have deſcrib'd to you in another letter (*b*), not, indeed, as being join'd with a pain in the inteſtines, which, by reaſon of their paralyſis, had never taken place, but as being join'd with a great inflammation of them all. The next letter you are to expect will be on the ſubject of tumour and pain of the hypochondria. In the mean while farewell.

LETTER the THIRTY-SIXTH

Treats of Tumour and Pain of the Hypochondria.

FOR thoſe reaſons which I have given in the thirty-ſecond letter (*a*), I paſs over the very ſhort ſection, upon the piles, which follows in the Sepulchretum, and come immediately to the two next ſections to this, that is to the ſixteenth, and ſeventeenth, and intend to comprehend the arguments of theſe two ſections, which are tumour, and pain, of the hypochondria, in this one letter. For theſe two affections are frequently join'd together, as it will be eaſy for you to perceive, from thoſe very obſervations of Valſalva, with which I begin.

2. A woman of forty years of age, of a yellowiſh complexion, had long been troubled with a hardneſs in the right ſide of her belly, which went down quite to the os ilium, and below it. If you touch'd the tumid part it was painful. She was thirſty. For about a month before her death, ſhe complain'd of a pain in her ſtomach, after taking food, and breath'd with difficulty. On ſome of her latter days a vomiting had come on; but on the two laſt, a very ſevere and violent pain.

The abdomen was found full of a yellow water, which was bitter in its taſte, and, like the ſerum of the blood, coagulated when on the fire. The ſtomach was narrow in the middle, ſo as to reſemble the ſtreightneſs of the pylorus, and, in ſome meaſure, to bear the appearance of two ſtomachs. The liver had grown out into a great bulk. For with its right lobe it reach'd almoſt to the lower part of the belly. The ſubſtance of this lobe was univerſally indurated, and, in many places, diſtinguiſh'd with whitiſh bodies, ſome of which, that were the largeſt, were equal to a filbert in magnitude: when it was cut into, it ſhow'd, in ſome places, a beginning of eroſion, and a putrefaction of the juices to have been at hand. And the left lobe of the liver, being in like manner indurated, preſs'd upon the ſtomach in that part,

(*b*) 29. n. 10. (*a*) N. 10.

where

where I have ſaid it was ſo much ſtreighten'd. The coats of the gall-bladder were become thick, and the cavity very much ſtreighten'd; and in the cavity, was contain'd a black, thick, and viſcid bile. In the abdomen of this body was no appearance of lymphæducts.

In the thorax the lungs were whitiſh, and variegated with ſpots of a blackiſh hue: the left lobe was connected, in ſome degree, to the back; but the right was every where free. The ventricles of the heart contain'd a fluid blood; yet in the right was the ſlight beginning of a polypous concretion.

3. In three obſervations which I have produc'd in other letters (*b*), I have deſcrib'd the ſtomach to be double, as it were, yet not divided by ſo great a conſtriction, as in the preſent caſe; though I have taken notice of a conſtriction, which was ſtill greater than this, from Blaſius (*c*), in a man who had been, in every reſpect, healthy, except his extreme hunger. Nor did I doubt but ſtructures of the ſtomach, of this kind, had exiſted from the original formation of the body (*d*): for which reaſon, I did not ſearch after the cauſe of theſe conſtrictions in the liver, although, in the two firſt of thoſe obſervations, it was extended towards the left ſide, more than it naturally is, but not hard, eſpecially as in the third, the liver was within its natural bounds: nor indeed in the laſt-mention'd obſervation, did I account for the vomitings, and pains of the ſtomach, from that conſtriction in particular, as they had not been obſerv'd in the two former.

Yet here I ſhall aſcribe the ſame ſymptoms to the greatneſs of that conſtriction, inaſmuch as it ſeems to have been more and more increas'd, contrary to what generally happens in the latter part of the diſeaſe, from the hardneſs of the liver increaſing every day, and compreſſing that part of the ſtomach in particular. For not only reaſon, but manifold obſervation, confirms how much the functions of the ſtomach are diſturb'd, when this viſcus is compreſs'd, and depreſs'd, by the increas'd bulk of the liver: as you will ſee from the obſervation of Bartholin (*e*), on a girl of ſix years of age; and of Fantonus the father (*f*), on a prieſt, the latter of which had the bulk of the liver ſo much increas'd as to fill "the whole epigaſtrium," and the former, ſo as to occupy almoſt "the whole abdomen." It is true the liver, when not at all morbid, ſtretches its thinner part, ſometimes, quite to the ſpleen, as I have taken notice in a former work (*g*): but when it is diſeas'd, it has, ſometimes, ſcarcely any bounds to its extenſion through the belly. Neither of which circumſtances ought to be unknown to phyſicians, and ſurgeons, leſt they ſhould be deceiv'd, in ſome caſes, by that appearance which is common.

Where the liver is found there is room only for ſuſpicion; as for inſtance, if a wound, by chance receiv'd upon the left hyochondrium, be attended with ſymptoms different from thoſe, which generally attend the wounds of the viſcera, that every body knows to be plac'd there. But when ſigns of a diſeas'd liver are not wanting, as in the woman we are ſpeaking of, the yellowiſh complexion, and hardneſs, beginning from the right hypochondrium,

(*b*) Epiſt. 16. n. 38. epiſt. 26. n. 31. epiſt. 30. n. 7.
(*c*) Ibid. n. 8.
(*d*) Epiſt. 26. n. 32.
(*e*) Sepulchr. l. hoc. ſect. 1. obſ. 4.
(*f*) Obſ. anat. med. 24.
(*g*) Adverſ. 2. animad. 2.

it will be leſs difficult, in ſuch a caſe, to aſcertain the extenſion of the liver to that part, to which the ſame continued hardneſs extends itſelf.

But whether in the other woman, whoſe hiſtory follows, the continuation of the pain, if you preſs'd the part with your hand, went ſo far as to prove the ſame thing, may better be conjectured by us, than affirm'd; as Valſalva, who was then a young man, and wrote his obſervations on the living body with great brevity, has not determin'd the queſtion.

4. A woman of ſixty years of age complain'd for a long time of a pain above the umbilical region: ſhe had a thirſt; ſhe cough'd; and ſpat up a catarrhous matter. Laſt of all, ſhe breath'd with difficulty: a few days before her death her belly ſwell'd ſuddenly to a great degree; her feet were affected with an œdematous tumour. At length, that pain going off by degrees, ſhe came to the final period of her life.

In the belly was a great quantity of limpid water: but no traces of the lymphatic veſſels. The ſpleen was twice as big as in its natural ſize. The liver was hard: and the gall-bladder was full of ſmooth calculi. But in another part of the liver, a congeries of veſicles was ſeen adhering to it, from which, when lacerated, a ſerum was diſcharg'd. And within the ſubſtance of the ſame viſcus, towards that part which was turn'd to the diaphragm, was found the cavity of an abſceſs, which occupied more than a third part of the liver. The matter of the abſceſs had burſt forth into the cavity of the thorax, on the right ſide, which was univerſally full of a ſanious pus. Yet the lungs were ſound.

5. As you have been inform'd into what part the abſceſs of the liver had burſt, I do not doubt but you now wiſh, with me, that all the ſymptoms which attended a caſe of this kind, that, perhaps, had never before occur'd to any one, and particularly the latter ſymptoms, had been collected by Valſalva with more exactneſs. For Stalpart (*b*), when he wrote of a certain man, in whom pus had paſs'd from an abſceſs of the liver, not plentifully, nor into the cavity of the thorax, but in a ſmall quantity, and into the lungs, through a fiſtula that perforated the diaphragm, which was become conſolidated with both of theſe viſcera, added no example of the ſame appearances having been ſeen in diſſection, by any other perſon, contrary to his uſual method, and contrary to what might have been expected from his extenſive reading. And after him, if we look for obſervators that are to be depended upon, as we certainly ought, I do not, at preſent, remember to have read any author, who has met with the ſame appearance, and ſtill leſs with the ſame as Valſalva has deſcrib'd. Who, I ſuppoſe, has left in writing all the ſymptoms he was able to collect. But amongſt them you ſee to what cauſe the tumour of the belly, and the œdematous ſwelling of the feet, are to be aſcrib'd. And there may be a difficult reſpiration, from the liver being thus affected, even when the diaphragm is ſound; as there may be a cough alſo, the origin of which was ſo much the more ambiguous in this woman, as it had an expectoration of catarrhous matter join'd with it.

There are extant here in the Sepulchretum (*i*), hiſtories of abſceſſes in the liver, to the number of twenty. But there is not one of them all, in which

(*b*) Obſ. rar. 46 cent. 1. (*i*) Sect. 17. obſ. 2.

a greater

a greater care in the obſervation of the ſymptoms is not to be deſir'd, if you except that of the man of Noremberg (*k*), which is deſcrib'd by Coiterus. But in him a vomica had poſſeſs'd the flat ſurface of the liver, ſo that it appears to have open'd itſelf into the cavity of the belly. And on the ſame flat part, it was in a young man whom Paawius (*l*) diſſected; but this had not diſcharg'd its pus; ſo that the foramen, "which was big enough to admit two clench'd fiſts," form'd by an "eroſion" of the diaphragm, "in "that part which lies on the left ſide of the liver," is not ſuppos'd to have been form'd by the eruption of the pus: beſides, none of the ſymptoms, which preceded the patient's death, are related, as none are, in like manner, in another caſe (*m*), wherein the ſame Paawius found two ulcers in the gibbous part of the liver, which penetrated inwardly.

Nor will you read the peculiar ſymptoms of the liver being ſuppurated, in the obſervation of Blaſius (*n*), where the abſceſs was of ſuch a nature, that the coat of the liver was the only part which ſeparated the pus from the diaphragm, to which the liver was cloſely connected. And theſe things I took notice of that you might perceive the more clearly, how very deſirable it was that what others had not done, could have been done by Valſalva; I mean in regard to the ſymptoms, which are, for the moſt part, common to abſceſſes of the liver, and which are not yet aſcertain'd, or, at leaſt, ſuch as are not in the number of thoſe that Coiterus has remark'd, beſides a cough, and a thirſt, which Valſalva has alſo remark'd: and whether thoſe are among the ſigns of a ruptur'd abſceſs of the liver, which are pointed out by Coiterus, in the following manner: "the tumour, and hardneſs," which had been in the right hypochondrium, and the region that lies beneath it, "vaniſh'd; "and the patient being ſeiz'd, on the ſame day, with ſome ſwoonings, ex"pir'd." For Valſalva mentions nothing to this purpoſe, but that the pain, which had been above the umbilical region, "went off gradually," perhaps from the matter of the abſceſs being carried off, more and more, from thence into the thorax. And what detriment happen'd to the action of the thorax, from this metaſtaſis, he does not ſo much as hint at; as he, likewiſe, does not ſay a word of reſpiration being made more difficult, nor yet a word of ſwoonings.

6. If you read over the great number of hiſtories, which were pointed out juſt now, in the Sepulchretum, you will find that the laſt-mention'd ſymptoms have no more been obſerv'd, in thoſe where a vomica of the liver had diſcharg'd itſelf into the cavity of the belly (*o*), than ſudden death itſelf, if you except a man whoſe caſe I have mention'd, as being deſcrib'd by Coiterus (*p*): and, on the other hand, you will read that a baker (*q*), whoſe liver had ſuppurated, "was ſometimes ſeiz'd with a ſwooning," though, at the ſame time, the "membrane of that viſcus was untouch'd and ſound. Nevertheleſs, both of theſe circumſtances, which are not to be met with in thoſe hiſtories, has ſo often occur'd to phyſicians, and among others, to my preceptor Albertini, that he preſs'd it very earneſtly upon practitioners, not to ſuffer a patient to

(*k*) §. 6.
(*l*) Ibid. §. 7. 8.
(*m*) §. 8.
(*n*) §. 16.
(*o*) §. 2. & 5.
(*p*) §. 6.
(*q*) §. 14.

be mov'd when there were ſymptoms of an abſceſs already form'd in the liver; not becauſe he was ignorant that motion has been preſcrib'd, at this time, by authors, who are, in other reſpects excellent, which I alſo read has ſucceeded happily ſometimes in our memory; but becauſe he ſuppos'd, that without uſing motion, it would, probably, happen, that the pus of an abſceſs ſo ruptur'd, without injuring the membrane of the liver, might be carried down to the inteſtines, through the branches of the biliary duct; and becauſe from a contrary practice, he foreſaw how eaſily the external membrane of the liver might be ruptur'd, ſo that the pus ſhould be pour'd out into the cavity of the abdomen, and kill the patient inſtantly, by bringing on a ſyncopé.

For this he remember'd to have happen'd at Bologna, at the time he was a young man, when an excellent phyſician, and, at the ſame time, an eminent ſurgeon, following the practice of thoſe authors, had preſcrib'd motion to a virgin who had a ſuppuration in the liver; by which means the pus being pour'd out into the abdominal cavity, the patient died ſoon after, in the arms of the women by whom ſhe was ſupported. And he had afterwards obſerv'd the ſame thing to happen, even without motion, at leaſt with a ſlight motion, ſuch as we naturally uſe in bed, or while we are riſing from bed, in ſeveral perſons, but particularly in a noble marquis, who had an abſceſs in the concave part of the liver. And by theſe obſervations I was influenc'd to ſuſpect, that almoſt the ſame kind of death, in another nobleman (all the ſymptoms of whoſe diſorder I will write to you accurately at another time (*r*)) was to be accounted for from almoſt a ſimilar cauſe. But he ſo much the leſs approv'd of motion, becauſe the abſceſs is ſometimes ſo large, or of ſuch a kind, that although it may find an exit, by chance, through the biliary ducts, yet the patients cannot be cur'd with that ſucceſs, which had happen'd to him, in a matron of the firſt rank, and in like manner in a ſervant-maid, both of which he aſſur'd me he had perfectly cur'd, by a long perſeverance indeed, but not by any other medicines than turpentine reſin, and whey, and afterwards by the juices of ground-ivy, and the conſolida media.

For where a vomica of the liver has open'd a paſſage for itſelf, through the muſcles of the abdomen, two inſtances of which happen'd at Bologna, although even then, all endeavours were us'd not only by internal, but by external remedies applied to the cavity of the abſceſs, that the liver might be heal'd, yet they were able to bring about this effect, only in one of the caſes: but in the other, in which a matter ſometimes was diſcharg'd, that reſembled water wherein freſh meat had been waſh'd, and ſometimes a yellow humour, they could not obtain the ſame ſucceſs; and the patient died at laſt: notwithſtanding in him the tumour had not been open'd ſo much by the force of nature, as by the error of art. For the phyſician, although a man of good reputation, and the ſurgeon with whom he was aſſociated, by no means attending to this, that the jaundice had preceded, and other appearances, in like manner, which ſhow'd the liver to be affected, had ſuffer'd themſelves to be deceiv'd by the touch, perhaps for the ſame cauſe, which

(*r*) Epiſt. 40. n. 28.

was

was found by Fantonus the father (s), in the extenuation of the abdominal muſcles, ſo as to imagine the tumour, which was actually in the liver, to be in theſe muſcles; for which reaſon, by applying emollient cataplaſms, they had, with a miſtaken diligence, brought on a ſuppuration.

You ſee what it is I diſapprove. For I am not one of thoſe who hold that where nature, itſelf, urges the ſuppurated tumour of the liver, to the muſcles of the abdomen, the pus ſhould be ſuffer'd to remain there, for a longer time than is neceſſary, and by this means be increas'd every day, become more acrid by ſtagnation, infect the blood, erode ſtill other and other parts of the liver, and open a paſſage for itſelf, which would be leſs expedient, as for inſtance, into the ſtomach; for into this cavity was ſuch an abſceſs found to have burſt, by Vogelius (t), through a large foramen; and into the thorax, as I have ſhown above; or, which happens more frequently than either of the foregoing, into the cavity of the belly, from whence a ſlow and miſerable death is brought on, if the immediate danger is avoided, which I have ſaid was ſeen by Albertini (u), and is confirm'd by the illuſtrious Van Swieten (x). His words are, "there is danger leſt a ſwooning, and ſudden death, "follow, at the time when an abſceſs of the liver is ruptur'd: for the "branches of the vena portarum, that were before preſs'd upon, by the "vomica, being now free from that preſſure, by the diſcharge of the pus, "may eaſily be ruptur'd from the blood ruſhing into them with impetuoſity; "eſpecially as they have been macerated, and almoſt half-eroded, by a "very acrid pus having ſo long lain upon them." Wherefore, agreeably to the opinion of this, and other authors of weight, I would, before theſe fatal accidents could happen, inform the patient, and the intimate friends, or relations, of the patient, how many and how conſiderable dangers threaten'd, if a free opening were not given to the pus, as ſoon as poſſible: and yet that if this free opening were given, with all that caution which the caſe requires, a recovery was not always, but ſometimes only, to be expected, and that this was ſignified by the aphoriſms of Hippocrates (y); and even that thoſe abſceſſes of the liver alſo had been more than once heal'd, from which when open'd, far different humours were diſcharg'd, from what Hippocrates had wiſh'd: to which kind of inſtances you will alſo add that, although the cure was long, and difficult, which is deſcrib'd by the celebrated Jo. Peter Albrechtus (z)

But now to come back from this digreſſion, let us go on, from the conſideration of thoſe ſymptoms, which Valſalva has not taken notice of in the hiſtory of this woman, to the conſideration of thoſe that he has remark'd.

7. Do not ſuppoſe that the congeries of veſicles, adhering to the liver, and when lacerated diſcharging ſerum, was any thing elſe but hydatids, as he himſelf has expreſsly ſaid, in a ſeparate paper, that they were ſuch as are frequently found to adhere to the morbid liver, externally. And you may with propriety ſuppoſe, that the quantity of limpid water, which was found extravaſated in the belly, was the effect of many, and without doubt, of the larger veſicles being burſt aſunder, by the quantity of ſerum, with which

(s) Obſ. anat. med. 13.
(t) Act n. c. tom. 5. obſ. 90.
(u) N. 4.
(x) Comment. in Boerh. aphor. §. 939.
(y) 44. & 45. ſ. 7.
(z) Eph. n. c. dec. 3. a. 5. obſ. 22.

they were turgid, or, at leaſt, in ſome meaſure. I, therefore, would not have you ſuppoſe, that theſe were of the ſame nature, of which thoſe peculiar veſicles were, fill'd with a yellow humour, that you will read the deſcription of, from the obſervation of Valſalva, in the third of the *Epiſtolæ Anatomicæ* (*a*).

But I ſhall not repeat thoſe hiſtories here, notwithſtanding they all relate to diſorders of the liver, and ſome to abſceſſes of it, as I am determin'd to purſue my original method, which is to avoid that negligence, in conſequence whereof, you will find that a great number of repetitions have been admitted into theſe ſixteenth and ſeventeenth ſections of the Sepulchretum. For to omit taking notice that in the former ſection the twelfth and eighteenth obſervations are the ſame, in the latter thoſe are certainly the ſame, which are pointed out in the ſecond obſervation, under article the tenth, and the twentieth, and in like manner, the fourth obſervation, and article the fourth of the eleventh, and that which is in the following eighth article, and that under number two, article fifteen, and under the ſame number eleven, the articles two, and ſix; to ſay nothing of the ſame, which are repeated *totidem verbis* in the ſcholia to the ſixteenth, and eighteenth obſervations. But without repeating what I then wrote, I ſhall add only three things to thoſe hiſtories of Valſalva.

8. And firſt, to that which is given there under number eight, it is proper I ſhould adhere to what it was not neceſſary to add in that place: I mean that the ſerum, with which the belly overflow'd, emitted a particular kind of halitus, which ſmell'd like what often proceeds from perſons in fevers, and indeed frequently from their urine: but that when put on the fire, in a ſhort time it became ſo turbid, inſtead of continuing limpid, as to reſemble cow's whey not well depurated: and, at length, that by the force of the fire it was wholly diſſipated. Nor ſhould this circumſtance be omitted, that about the lumbar glands, ſome ſlight traces of the lymphatic veſſels, which were much emptied, had diſcover'd themſelves.

9. But to the next hiſtory which I have ſubjoin'd to that (*b*), nothing remains to be added to make it compleat, according to the obſervation of Valſalva, after having ſufficiently deſcrib'd it to you in a former letter (*c*). You will perhaps rather expect from me, that as the veſicles deſcrib'd in that hiſtory, were contain'd within a very large one, as within a purſe, I ſhould defend the opinion of Valſalva againſt many authors, the number of whom I ſee is much increas'd, within theſe few years, in particular, and who give it as their opinion, that the veſicles found in encyſted tumours, which ſometimes occur in the liver, and the other viſcera, do by no means relate to the glandular follicles being enlarg'd. But I have no diſpoſition, nor indeed is there any neceſſity, to fall into that diſpute again, ſince the opinion of Valſalva did not depend upon that hiſtory only, nor upon any obſervation of veſicles whatever.

You may even ſee that Valliſneri, who, in like manner, long before them, ſaw bladders, or cyſts, pregnant with other ſmaller bags, or veſicles, did

(*a*) N. 8. 9. 10.
(*b*) N. 9.
(*c*) XXI. n. 55.

not,

not, in that very writing which I then refer'd to, take any veſicles whatever, for glandular follicles dilated. Nor did Valſalva find veſicles only in encyſted tumours of the liver, for in that hiſtory, certainly, which I have juſt now compleated to you, he had found the whole liver made up of veſicles: although even in thoſe cyſtic tumours of the ſame viſcus, it is not put beyond all doubt, that the included veſicles can by no means relate to glandular follicles. And what if veſicles not unlike theſe, have ſometimes appear'd in external encyſted tumours? Do they, as they are external parts, for that reaſon want glandular follicles? But, as I have already ſaid, I would not wiſh again to enter into theſe diſputations.

10. It is much better to attend to this circumſtance, likewiſe, in the laſt of thoſe hiſtories of Valſalva *(d)*, which Malpighi expreſsly commended in it; I mean the biliary duct communicating with the abſceſs of the liver, by a large orifice, and dilated in the remaining part univerſally, ſo that it manifeſtly appear'd how this duct might take up the veſicles from the cavity of the abſceſs, and tranſmit them quite to the duodenum. For which reaſon we have the leſs occaſion to doubt, whether this duct does not frequently tranſmit, through its corroded branches, blood, and pus, which it has receiv'd from vomicæ of the liver, down to the inteſtines, in the manner that is taken notice of above *(e)*; and as the biliary ducts being much enlarg'd, having the orifice, by which the bile flows into the duodenum, big enough to admit a little finger, with great eaſe, evidently confirm'd, in a certain girl *(f)*, who having, at different times, diſcharg'd many pounds of pus by ſtool, had a great quantity of the ſame purulent matter in many abſceſſes of the liver, in thoſe ducts, and in that inteſtine.

Theſe things then being granted, and as we have frequent, and evident, examples of a ſimilar circumſtance in the kidnies, from whence the ureters tranſfer pus and blood to the liver, I cannot help being ſurpriz'd, that ſome very learned men ſhould, nevertheleſs, ſometimes ſeem ſo far forgetful of this open paſſage from the liver, as to aſſert that the meſenteric veins "often "produce purulent diarrhœas, and carry out the corrupted ſubſtance of "the liver," as if theſe veſſels convey'd humours, from the liver, to the inteſtines, and not from the inteſtines to the liver; and that others hold it impoſſible to conceive, how a perſon could vomit blood, and diſcharge it by ſtool, without any mark of injury in the ſtomach, when, at the ſame time, they are not ignorant that in each lobe of his liver, which was very much enlarg'd, a conſiderable abſceſs was found.

But let us return to the obſervations of Valſalva, which I have not yet publiſh'd; and to thoſe two relating to the liver, which I have deſcrib'd above, let me add as many which relate to the ſpleen.

11. A young man of about twenty years of age, having, from an original ſtrength, and firmneſs of conſtitution, degenerated into the ſtate of a Valetudinarian, for two years paſt, attributed this change in his health to hunting, and dancing, and to other things of that kind, which he had indulg'd himſelf greatly in the practice of, and to the effect of the buſineſs by which

(*d*) N. 10.
(*e*) N. 6.
(*f*) Eph. n. c. dec. 3. a. 4. obſ. 73.

he

he earn'd his livelihood; for he was by trade a flax-dreſſer. He was become pallid in his countenance, and complain'd, according to the cuſtom of hypochondriac perſons, of ſlight diſorders of the belly, and thorax, which recur'd now and then. At length, in the ſummer of the year 1688, a large and hard tumour diſcover'd itſelf in the left hypochondrium, with a ſenſe of weight, and a difficulty of reſpiration in walking. To theſe ſymptoms was, ſuddenly, added a large vomiting of blood, with a great loſs of ſtrength, an increaſe of tumour, and a fever. By the aſſiſtance of remedies he was freed, on the firſt days, from the vomiting, and after that from the fever; and having us'd chalybeates for the three ſucceeding months, the hardneſs of the tumour was alſo remov'd: yet it continued equally large, with a pallid, and, as it were, almoſt citron colour of the countenance.

But in the month of January, the vomiting of blood returning two or three times, he was ſeiz'd with a violent fever, attended with a hard and quick, though at the ſame time ſmall pulſe, a pain, weight, and tenſion, of both the hypochondria, and an inextinguiſhable thirſt. However, on the ninth, or eleventh day, of the fever, he was taken off by a very placid kind of death.

The body being diſſected, it was amazing what a ſmall quantity of blood remain'd in all the veſſels. And, for this reaſon, the viſcera of the belly attracted the eyes by an unuſual paleneſs, and almoſt whiteneſs, except the ſpleen which preſerv'd its natural colour; but this viſcus was ſo much increas'd, as to exceed the liver in bulk, and weigh four pounds and a half. Yet it was not harder than it generally is, except that on its convex ſurface, in one or two places, was contain'd, deep within its ſurface, a ſubſtance of a very ſolid nature, of the bigneſs of a large nut. In the trunk of the ſplenic vein, polypous concretions lay hid, which divided themſelves, together with the branches of that vein, in a very elegant manner, even within the ſpleen. The liver was very pale, except that here and there it was mark'd with black ſpots. The gall-bladder, which was more pale than the liver, and even whitiſh, contain'd a little bile of a very dilute colour, a ſimilar bile to which was not wanting in the fundus of the ſtomach. The other parts of the belly were ſound.

In the thorax the lungs on their anterior ſurface were pale; but on the back-part they appear'd inflam'd, and were of a black colour, inclining to purple: but, when cut into, they diſcharg'd a great quantity of frothy ſerum. In the right ventricle of the heart was only a ſmall polypous concretion; and in the left only a beginning thereof.

12. A great number of remarks might be made upon this hiſtory. But a regard muſt be had to brevity, and therefore many things muſt remain undiſcuſs'd. The large, and frequently-repeated, vomiting of blood in this young man would have been eaſily accounted for, at the time when it was not doubted, but any thing might be ſent from the ſpleen into the ſtomach, by the vein which is call'd vas breve. But after that the circulation of the blood, and experiments, have taught differently, the circumſtance requires quite a different explication; as, for inſtance, if we ſay, that in proportion as leſs blood can be brought by the cæliac artery into the obſtructed ſpleen, ſo much the more muſt be carried through the other branches of the ſame artery to the ſtomach, or that the return of the blood from the ſtomach,

through the vas breve is impeded by the tumefaction of the ſpleen, which frequently, and greatly compreſſes this veſſel, betwixt itſelf and the dilated ſtomach; ſo that by one or the other of theſe hypotheſes, or any other of a ſimilar kind, it may be underſtood, how the blood can open an exit for itſelf, from the over-diſtended veſſels, into the cavity of the ſtomach, which is already particularly diſpos'd to ſuch a rupture.

Nor will it I ſuppoſe ſeem to be any objection with you, that the ſtomach of this young man has been ſaid to be ſound; for you will imagine that the blood had been diſcharg'd by a great number of orifices, that were very ſmall, into this viſcus, which was probably furniſh'd with very lax fibres.

But if you examine the ancients themſelves, or thoſe who continued for ſome time to be their ſectaries, and look into the diſſections made by them, and collected in the Sepulchretum *(g)*, of ſuch patients as had labour'd under a diſorder of the ſpleen, and a vomiting of blood at the ſame time, you will find only one *(h)*, which ſhows any veſſel to have been found manifeſtly open in the ſtomach. This was written by Riolanus, in the ſecond book of his Anthropographia there pointed out, yet not in the fifteenth chapter, but in the ſeventeenth, and about the end. To whom I ſhall readily give credit in the affair, but as I juſt now explain'd it, in regard to the vas breve, which was dilated to the thickneſs of a little finger: I will alſo believe, if you pleaſe, that he found the ſame veſſel open'd into the ſtomach; although I ſee that he is there much diſpos'd to magnify thoſe things which confirm his own opinion.

For I omit that, when ſpeaking of him, who, as you have it in the fifth book of the Epidemics, was ſuffocated by a vomiting of blood, and ſaying "that a great quantity of blood had come forth at the ſpleen and down-"wards," he adds nothing in relation to the proper interpretation of theſe words; as if he choſe rather they ſhould be ſo underſtood, as to relate to the diſcharge of blood within the belly, (which the very ancient author of that book could not have ſeen, as it was not uſual then to diſſect human bodies) rather than to very red ſpots in the ſkin, appearing, according to the interpretation of Valleſius *(i)*, in the region of the ſpleen, and beneath it. I therefore omit this. But I can by no means paſs by his ſaying, that in the body of cardinal Cibo, who died after the ſame kind of vomiting, "Val-"verda had remark'd (in the fifth chapter of the ſixth book) that by com-"preſſing the ſpleen, the ſtomach was fill'd with blood, which was carried "thither by the vas breve."

For Columbus, who had diſſected the body, has not hinted any-thing of this experiment, as he has ſaid nothing more of the diſſection, than what is read in the Sepulchretum *(k)*: and Valverdus, who has ſpoken of it, has made uſe of ſuch words, that you cannot properly underſtand, whether the ſtomach "was turgid with blood" internally, or externally, when the ſpleen was compreſs'd; and indeed Sanctorius, who had inſpected both of the authors, underſtood them ſo as to write what you will ſee in the ſcholium, ſub-

(g) L. 3. ſ. 8. obſ. 71. & ſeq.
(h) Obſ. 73.
(i) Comment. in eum locum, n. 37.
(k) Obſ. cit. 73. §. 2.

join'd

join'd to that obſervation of Columbus: "while the region of the ſpleen "was compreſs'd, the blood regurgitated to the orifice of the ſtomach."

Yet many bodies, although they were diſſected after very great, and fatal, vomitings of a bloody humour, or even of blood itſelf, have ſhown no ſign of an open, or eroded, veſſel in the ſtomach; and even the vas breve, notwithſtanding the ſpleen was much bigger than in its natural ſize, was extremely ſmall, and the roots of it, though they reach'd to the external coats of the ſtomach indeed, yet ſcarcely reach'd to the internal: obſervations of which kind you may find even in the Sepulchretum *(l)*.

Wherefore, the blood is either brought from the inteſtines, into which it had burſt, or through the biliary veſſels, from the liver, which the celebrated Van Swieten *(m)* thought to be the more probable; as, having examin'd with great care all the viſcera of the belly in the body of a perſon who died of a diſorder of this kind, he could no where find any appearance of a ruptur'd veſſel, nor any conſiderable injury of any kind.

Indeed, there is alſo extant an obſervation of the celebrated Budæus *(n)*, which I have already pointed out, in a woman, in whom, after having vomited a great quantity of matter, ſimilar to grumous and corrupted blood, although ſhe had the vas breve full of the ſame kind of matter, and almoſt equal to a finger in thickneſs, yet the ſubſtance of the ſtomach was without any conſpicuous veins, and the gall-bladder was enlarg'd, and turgid with the ſame matter, ſo that it was eaſy to perceive, from whence this matter had come into the ſtomach, which even then contain'd a large quantity.

But I would not have you ſuppoſe from hence, that it is my opinion blood can never burſt into the ſtomach, from the vas breve, in conſequence of the direction of the blood being preternaturally chang'd for a time. For it does not eſcape me what Georg. Wolffg. Wedelius *(o)* has ſaid was found in a matron, after a vomiting of blood; what Jo. Dan. Dolæus *(p)* in a girl; what Stangius and Hillerus, jointly, according to Hoffmann *(q)*, in a young man: the laſt of which obſervations, I have taken notice of to you elſewhere: and the two firſt I imagine are the ſame that I remember to have read in Stahl *(r)*. In each of theſe bodies the ſpleen was either larger, or harder, than it naturally is: the vas breve was alſo either thicker, or in part turgid with blood, or at leaſt conſpicuous by its black colour, in the inſide of the ſtomach, and had its branches there ruptur'd, or ſome one of them ſo far pervious into the ſtomach as to admit a probe by that paſſage, or flatus, or even blood, when this veſſel was gently compreſs'd.

Yet although any perſon, who is not ignorant how eaſily either a probe, or flatus, or impell'd humours, may open to themſelves a paſſage, after death, through the lax coats of the diſtended branches of the veſſels, which was not before open, will perhaps be in ſome doubt as to theſe obſervations; yet you are at liberty, for me, to admit of them, ſo you do but remember that they were few, when compar'd with the others: and that we cannot,

(*l*) In addit. ad. cit. ſect. 8. obſ. 11. & 13.
(*m*) Comment. in Boer. aph. §. 950.
(*n*) Eph. n. c. cent. 1. & 2. obſ. 105.
(*o*) Earund. dec. 1. a. 9. obſ. 20.
(*p*) Earund. dec. 3. a. 5. & 6. obſ. 257.
(*q*) Medic. rat. t. 4. p. 2. ſ. 1. c. 3. obſ. 2.
(*r*) Differt. de vena port. porta malor. ſ. 3.

therefore, readily aſſert with Wedelius (*s*), "that a bloody vomiting moſt "frequently ariſes from a preternatural opening of the vas breve." And although he ſhould anſwer in regard to every one, according to what he obſerv'd in a young ſtudent, that the vomiting of blood returns, chiefly, at the time when the patient lies on his right ſide, and that therefore it was neceſſary for him to lie on the left ſide, as he had order'd; would it from thence follow that the blood came forth from the vas breve, as if no other veſſels beſides this went to the left ſide of the ſtomach'?

But whether theſe, or any other paſſages, for the blood, evidently lie open into the ſtomach, at that time, or, which is generally the caſe, no paſſages at all are open'd; for you will even read in the commentaries of the famous Academy of Peterſburg (*t*), of a man who was carried off by a ſudden death, whoſe ſtomach was found quite full of coagulated blood, and yet "per-"fectly ſound," whereas "in the ſpleen, on the contrary, were found evident "marks of putrefaction;" whether, therefore, paſſages through which the blood has been diſcharg'd, do, or do not, manifeſtly appear, you will always explain, after ſome of the methods which have been hinted at by me, or by others, or at leaſt after ſome ſimilar method, not only the obſervations that I have taken notice of, but alſo thoſe which occur in this ſixteenth ſection of the Sepulchretum (*u*), of the ſpleen having become more than once tumid, but decreaſing after a very large vomiting of bloody ſerum, or blood; and to theſe you may add that which Jo. Maurice Hoffmann (*x*) has publiſh'd, from the papers of his father: although where it is not well-aſcertain'd by diſſection, what part is diſeas'd, or what part is ſound, the fault may be unjuſtly attributed to the ſpleen, which ought to be thrown upon ſome other part that is near it, or even upon the ſtomach itſelf.

13. You may enquire here, why therefore in the young man in queſtion, whoſe ſpleen, without doubt, was not free from diſeaſe, not only this viſcus had not its tumour diminiſh'd by a large vomiting of blood, but even increas'd? To which may be anſwer'd, that a great loſs of ſtrength through the whole body, from a violent profuſion of blood, being added to the great laxity of this viſcus, which was already become very infirm, the blood could not be propell'd, and carried through it, but with great difficulty, eſpecially as it was become more inert from this profuſion; and that therefore it was under a neceſſity of ſtagnating more in the ſpleen, by which that viſcus became more and more relax'd. But it may ſeem much more ſurprizing, as the vomiting of blood return'd two or three times, in the latter end of the diſeaſe, how ſo violent a fever could follow theſe vomitings, and be attended with thoſe ſigns which ſeem'd to ſignify ſome inflammation in the hypochondria, of which, perhaps, theſe red ſpots, diſtinguiſhing the liver here and there, were tokens.

For the blood which remain'd in all the veſſels, was in ſo ſmall a quantity, and had ſuch an inertia as you would naturally ſuppoſe to be the conſequence of thoſe hæmorrhages, as the diſſection demonſtrates. And not

(*s*) Obſ. 20. cit.
(*t*) Tom. 1.
(*u*) In ſchol. ad obſ. 13 & 14.
(*x*) Eph. n. c. cent. 9. & 10. in append. n. 1. obſ. 6.

2

to ſpeak of the appearance itſelf, the ſmall quantity of blood was argued from the paleneſs, and almoſt whiteneſs of the viſcera, and at the ſame time the inertia, eſpecially when conſidered in conjunction with the ſmall quantity of bile, which was of a colour extremely dilute. In the bodies of cachectic perſons, I have often obſerv'd the cortex cerebri to be very pallid, and the medulla to be much whiter than uſual, in conſequence of the ſanguiferous veſſels, which go thereto, being ſome empty, and ſome ſemipellucid, and for that reaſon ſcarcely at all obſtructing the enquiry of the eye, that ſhould endeavour to diſcover, by looking externally, the parts whence the ſmall roots of the nerves go out from the trunk of the medulla, ſo that I have ſometimes much wiſh'd for brains of this kind, either in order to ſee theſe parts the more eaſily, or to demonſtrate them. However, whether the ſmall quantity of bile, and the very dilute colour of it, ſignified that the more acrid particles were contain'd in the blood, you may of yourſelf determine. In the mean while, I will enquire what that was, or rather what that was not, which the ſpleen of this young man contain'd, deep within its ſubſtance, in one or two places, of a more ſolid nature, and of the bigneſs of a large nut.

14. You have in one of the two ſections of the Sepulchretum, which I firſt mention'd, that is in the ſeventeenth, an obſervation *(y)* of the ſpleen containing, within its ſubſtance, a ſteatoma conſiſting of an "adipoſe matter, "and of the bigneſs of a nut." You have, in the ſame ſection, many obſervations of the ſpleen being become in part cartilaginous, or in part bony, or even, as Pechlinus (*z*) aſſerts, ſtony; to which you may join other obſervations, not only from the preceding ſection *(a)*, but alſo from the firſt of the former book *(b)*. But I believe that induration, which was found in this young man by Valſalva, was of neither kind; for either of them would have been eaſily known: and he himſelf, when he had found in the old woman, of whom I ſpoke to you in the twentieth letter *(c)*, a bone within the external part of the ſpleen, did not in the leaſt heſitate to affirm, that he had found a certain bony body of a ſpherical figure. I ſhould therefore imagine that it was of ſome other kind, or if it was of either kind that I have ſpoken of, I ſhould ſuppoſe it was of the ſecond, that is the beginning of a bony or ſtony concretion, rather than of the firſt.

For this is much the more frequent in the ſpleen, not only as a great number of obſervations, pointed out in the Sepulchretum, ſhow, but as others alſo, which are ſcatter'd up and down, in anatomical writers, and are eaſily to be found, confirm. Wherefore, you will find a great number, in like manner, in my letters which I have already ſent *(d)*, or which I ſhall ſend hereafter. However, I would not deny but this has been more frequently obſerv'd in old men, than in young, and likewiſe in the coat of that viſcus, rather than within the ſubſtance of it. For in the coat, or at leaſt on the external ſurface, after thoſe who firſt obſerv'd theſe appearances, as

(*y*) 17.
(*z*) In hiſtoriam obſ. 2.
(*a*) In auctuar. obſ. 31. & ſchol.
(*b*) In auctuar. obſ. 31. & ſchol.
(*c*) N. 41.
(*d*) Epiſt. 7. n. 9. & 11. epiſt. 10. n. 19. epiſt. 24. n. 18.

Andernacus

Andernacus (*e*), Veſalius (*f*), and Columbus (*g*), they have continued chiefly to be ſeen.

Yet this appearance has even been ſeen, ſometimes, in young men, as by the celebrated Fantonus (*h*), and by myſelf (*i*): nor are obſervations wanting, which ſhow it to have exiſted within the coat likewiſe. For Carolus Stephanus (*k*) formerly admoniſh'd, that it was neceſſary to cut deep into the ſubſtance of the ſpleen, "that we may ſee whether there are any calculi in its "ſubſtance, as they ſometimes have been found;" and you will read here in the Sepulchretum (*l*), that a ſtone, of the bigneſs of a cheſnut, "had been "found in the ſpleen of a beautiful young woman:" and in the eighteenth ſection (*m*), that the ſpleen, which was immoderately enlarg'd, "was full of "very white ſtones;" and in another (*n*), "that it contain'd many ſtones;" to omit mentioning others taken notice of by Lentilius (*o*), and among theſe, "two pretty large ſtones, beſides many others which accompanied them:" and I myſelf will, on another occaſion, deſcribe to you a caſe, in which I found a bony body going inwards, from the coat of the ſpleen, that was alſo bony; and to this claſs I ſhould likewiſe ſuppoſe, that, which I juſt now ſaid was ſeen by Valſalva, in the old woman, was to be refer'd. And what will you ſay to this, that Littre (*p*) ſhow'd to the Royal Academy of Sciences at Paris, not only the "external membrane," as ſome write, but the whole ſpleen of a certain old man become bony: and in the Muſæum of this univerſity, we have another, taken out of a body which was publicly diſſected in the college, before the beginning of the preſent century.

15. And as this ſpleen has hitherto been deſcrib'd by no body, I hope it will not be diſagreeable to you, if I give you the account of it. As I have, by the conſent of the celebrated Valliſneri the younger, who is governor of the Muſæum, diligently examin'd it, as far as could be done externally. It is ſeven inches long, and four inches broad, in its broadeſt part, and at one extremity more than two inches broad; for with the other it terminates in an angle: in one place it is as thick as the little finger, in other places leſs by one half, and in many places, but eſpecially at the borders, much thinner. It is of an irregular figure, and curv'd longitudinally: of an unequal and tuberous ſurface, yet more ſo on its concave, than on its convex part. Almoſt every where about the edges are to be ſeen the dried remains of the membranous coat: theſe remaining parts go from thence to each ſurface, but moſt evidently to the hollow ſurface, which is ſtill evidently inveſted with its membrane, and for that reaſon appears of a yellow colour inclining very much to a brown; but the convex ſurface is of a yellow colour inclining to white, if you except ſome places in which the membrane remains, juſt as it does on the hollow ſurface. And it is probable that when they pull'd away the ſpleen from the diaphragm, to which it adher'd very cloſely, they tore the membrane away from the convex

(*e*) Apud. Bauhin. theatr. anat. l. 1. c. 43. in adnot.
(*f*) De fabr. corp. hum. l. 5. c. 9.
(*g*) De re anat. l. 15.
(*h*) De obſ. med. anat. ep. 8. n. 10.
(*i*) Epiſt. 24. n. 18.
(*k*) De diſſect. part. corp. hum. l. 3. c. 40. ubi de liene.
(*l*) Sect. 16. obſ. 20.
(*m*) Obſ. 22.
(*n*) Obſ. 25. §. 9.
(*o*) Eph. n. c. dec. 2. a. 7. obſ. 136.
(*p*) Hiſt. de l'acad. r. des ſc. a. 1700. obſerv. anat. 7.

ſurface of that viſcus, ſo as to leave it almoſt univerſally fix'd to the diaphragm, and in ſome places even univerſally, and at the ſame time, ſome lamellæ of the indurated ſpleen which coher'd to the membrane in thoſe parts; and it is probable that from hence was the origin of certain oblong hiatuſſes, and foramina, of which there is ſcarcely any on the hollow ſurface, as there is not the leaſt trace of thoſe places through which the veſſels formerly enter'd.

If you look at theſe hiatuſſes, you perceive that this ſpleen is not every where ſolid; you even ſee that it is cavernous, and empty, in many places; ſo that it is not at all ſurprizing, it ſhould weigh no more than ten drachms: although that ſtone, which I mention'd juſt now (*q*), as being found in the ſpleen, of the bigneſs of a cheſnut, was "of the weight of two ounces and "a half, and one drachm." For this was made up of laminæ, like egg-ſhells, wrap'd over one another, "in the form of a cruſt;" ſo that no empty ſpaces were interpos'd, as in this Paduan ſpleen, and perhaps alſo in that Pariſian ſpleen, the weight of which we know to have been an ounce and a half, but are ignorant of the dimenſions.

It is alſo known, in what kind of man this ſpleen was found, that is in a man who had not been ſubject to diſorders, which are ſuppos'd to have a reference to the ſpleen; and of what ſubſtance it ſeem'd to conſiſt, that is of a ſtony ſubſtance. But in regard to ours the latter circumſtance is doubtful; and the former, as I have heard from the ſon of my predeceſſor, who had been preſent at the diſſection, was quite different. For the body, from whence it was taken, was that of a porter, and not an old man, who had not only been weaken'd by dreadful and incurable pains in the region of the ſpleen, but had even been oblig'd thereby to enter into this hoſpital, where he died.

But in regard to the ſubſtance of this ſpleen, although Valliſneri the elder, to whom it had been laſt given, wrote upon it, with his own hand, theſe words *milza oſſeffatta d'uomo*, that is to ſay, "the ſpleen of a man oſſi-"fied:" and although ſome ſmall parts of it, which are protuberant on the hollow ſurface, ſeem to be bony, yet when you inſpect the other ſurface, you will certainly think that it would have been more proper, if he had made uſe of the ſame word here alſo, which he often made uſe of in regard to the brain of an ox, which was ſuppos'd to be ſtony (*r*), and had written *oſſeo-lapideous* upon it, which I take for granted he would have done, if he could have beſtow'd as much time and labour upon this, as he beſtow'd upon that. But it might be more eaſy for Lanzonus (*s*) to determine upon a ſimilar appearance; for he having found in a blackſmith, who was five and fifty years of age, of a melancholic temper, and who died of a quartan fever, among other marks of diſeaſe, the ſpleen ſo hard that it did not yield to the knife, but when "ſtruck with the hammer, flew aſunder into three ſeparate parts "like a ſtone;" did not in the leaſt heſitate to pronounce that it was "pe-"trified."

16. And, indeed, I have often before inſpected, and now particularly, whilſt I write theſe things to you, I have under inſpection, a membrane of four

(*q*) N. 14.
(*r*) Conſideraz. int. al. creduto cervello di bue impietr.
(*s*) Eph. n. c. cent. 9. obſ. 7.

inches

inches in length, and two inches in breadth, which was taken from the convex ſurface of a human ſpleen in my preſence, and by my order. This ſeems to be almoſt wholly converted into flat and thin laminæ, which whether you conſider them on the external, or the internal ſurface, you immediately perceive to be entirely bony, without the leaſt occaſion for doubt. But betwixt them, and, in part, out of them, grow ſmall tubercles externally; but internally larger tubercles lie upon them, of an unequal and granulated ſurface, which went down within the ſubſtance of the ſpleen to the depth of half an inch: and theſe ſeem to be a kind of excreſcences, as if from a juice of a middle nature betwixt bone, and calculus, which had been effus'd and concreted. Of which ambiguous nature that ſubſtance ſeems to me in great meaſure to be, from whence the ſpleen that I have deſcrib'd, from the College Muſæum, became indurated. In examining of which, I learn'd that what I had conjectur'd from the membrane, which I juſt now ſpoke of, and others, was certainly not always true, though perhaps ſometimes; I mean that the converſion of the ſpleen into a bony, or ſtony nature, begins in the coat, and, in general, in that part of it which inveſts the convex ſurface, and which is, for this reaſon, ſubject to the alternate preſſure of the diaphragm.

For as often as ever it happen'd to me to ſee it, in that part, I have ſeen it, and others have ſeen it there likewiſe, or at leaſt all theſe, nearly, who have ſaid in what particular part, of the inveſting coat, they found the appearance; for what Pechlinus (*t*) found on the oppoſite ſurface, is rare: and to this I ſuppos'd that the monitum of Boſchas is to be refer'd, which is likewiſe produc'd in the Sepulchretum (*u*), of "the upper coat of the ſpleen "where it is turn'd towards the muſcles of the abdomen, being become ſo "hard, that it ſeem'd to be a ſcirrhus within the ſubſtance of the ſpleen," though without reaſon: as you will alſo readily ſuppoſe, that what the moſt excellent Plancus (*x*) remark'd, in a nobleman far advanc'd in age, that is to ſay an oſſification "in the membrane of the ſpleen," where it adher'd cloſely to the peritonæum, or that which (*y*) others obſerv'd in a woman of three and thirty years of age, that is "half the external ſurface" of the ſame viſcus, "intirely chang'd into a cartilaginous nature," to be of the ſame kind.

For as to the very ſkilful Weiſſius (*z*) finding the beginning of a change of this kind, that is to ſay, "a white, tendinous, and hardiſh ſubſtance, up-"on the back of the ſpleen, and its middle ſurface, in an oblique and tranſ-"verſe direction;" or as to an old anonymous author, as you have it in the celebrated Targioni (*a*), having found "ſo great a hardneſs of the ſpleen "in two places, where it had adher'd to the ribs, that the part ſeem'd bony, "or at leaſt cartilaginous, but very hard;" you will be in little doubt, I ſuppoſe, on determining that theſe are to be refer'd to the claſs ſpoken of above. I therefore conjectur'd that the diſorder was, afterwards, propagated from that part of the coat, which covers the convex ſurface of the ſpleen, into the remaining parts of the coat, and that by this means the whole ſpleen

(*t*) Obſ. cit. ſupra. ad n. 14.
(*u*) Sect. hac 17. obſ. 21.
(*x*) Epiſt. de monſtris.
(*y*) In commerc. littr. a. 1734. hebd. 29.
(*z*) Et a. 1740. hebd. 35.
(*a*) Prima raccolta di oſſervaz. med.

was

was at length ſurrounded, as Bauhin (*b*) found it, and, if I rightly underſtand, Columbus alſo (*c*), and they in like manner who are here pointed out in the ſixteenth obſervation of the Sepulchretum. And that after this, the indurated matter increaſing more and more, and puſhing inwardly all round from the coat, compreſſes the whole ſubſtance of the viſcus, deſtroys it, and fills up its place. Yet this, though it may ſometimes happen, as I have ſaid, certainly did not happen in the ſpleen deſcrib'd by me (*d*); ſince whatever part of its coat remains (and a great part of it does remain) is not only not bony, or ſtony, but is even, at this very time, of ſuch a nature, that when moiſten'd externally; for I have made the experiment in more than one place; itſelf, only, becomes ſoon after ſoft, juſt as dried membranes are wont to do.

But thus far on this ſubject. Now let us go on to another obſervation of Valſalva, which is one of thoſe that relate to the ſpleen.

17. A woman of eight and twenty years of age, of a ſlender make, being married, but not having born children, had been formerly troubled with a chronic fever, which had left the ſpleen ſo much increas'd in its bulk, that a tumour of this region was very evidently felt: ſhe alſo kept her paliſh complexion, and was ſometimes taken with a fever, which began with a rigor, and continu'd ſome days. As ſhe had ceas'd to have a diſcharge of menſtruous blood, for two years paſt, ſhe ſoon after was troubled with a cutaneous, but obſtinate ulcer, of the left leg: at the ſide of which ulcer, the leg ſwelling afterwards, an abſceſs was form'd. This abſceſs, although it had been exceedingly well cleans'd, and ſeem'd to be coming to a cicatrix, yet when the time was at hand that the menſtrua ſhould, according to their regular courſe, have been diſcharg'd, the ulcer was irritated, increas'd, and emitted a much larger quantity of ſerous ichor; and on the contrary the farther it was paſt the time of menſtruation, the leſs was the ulcer irritated, and the leſs matter was diſcharg'd. At one of theſe very times therefore, when, on the preceding day, not only a ſmall quantity of ichor, but ſuch as had a ſtrong ſmell, had been diſcharg'd, and no new marks of death being at hand, had come on; behold ſhe was oblig'd, early in the morning, to ſit upright in her bed, and, turning herſelf to one ſide and to the other, complain'd ſo much of a ſtreightneſs of the præcordia, and of a very great anxiety at her cheſt, that ſometimes ſhe could ſcarcely utter a word, and ſpat up a great quantity of frothy matter, and matter that was tinctur'd with blood: and thus within an hour ſhe died.

The cavity of the belly was fill'd, almoſt univerſally, on the left ſide with the ſpleen, which was ſo much increas'd in its bulk, and eſpecially in the longitudinal direction, that it weigh'd eight pounds and a half. The internal parts, of this viſcus, did not ſeem to differ from their natural conſtitution: externally, both the ſanguiferous, and lymphatic, veſſels appear'd enlarg'd, ſo that the lymphatics were diſcover'd up and down through the coat of the ſpleen, and made a very beautiful appearance.

The ſpermatic veſſels contain'd blood of a violet colour; ſo that you might perceive it had been retain'd there for a conſiderable time. The teſtes were

(*b*) (*d*) N. 15.

(*c*) Locis ſupra indicatis ad n. 14.

almoſt

almoſt wholly ſcirrhous, ſo that no body need wonder at the woman's being barren though young. In them was no veſicle, if you except one in the left, which was equal to the half of a filbert, in its magnitude. This adhering very cloſely to the ſubſtance of the teſtis, and being diſtinguiſh'd with ſanguiferous veſſels, contain'd not a limpid, but a browniſh humour: which being let out, a body of a yellow colour came into view, of the bigneſs of a lentil, and almoſt of the form, but adhering to the veſicle internally, ſo as to be ſcarcely prominent: and this body was ſurrounded with ſome very ſmall globules, like a bulwark. And there were in the ſame teſtis ſome other bodies alſo, which were of the ſame colour, but not of the ſame figure, nor furniſh'd with the ſame ſurrounding bulwark.

As to the thorax, every part therein was ſound, except that the lungs were ſuffus'd with a redneſs, and when cut into diſcharg'd a great quantity of matter, of the ſame kind with that which I have ſaid the woman ſpat up before her death.

18. Of barrenneſs from a diſorder of the ovaries, and of ſuffocation, from deprav'd humours ſuddenly falling upon the lungs, it is not the proper place to treat here; nor yet of married women, who do not bring children, being frequently, at length, liable to ſome very great diſorder; nor of ſome abſceſſes in women, which, to all appearance, tend to a cicatrix, and are, nevertheleſs, frequently very difficult to be brought to it, and for this reaſon, that when the time returns, in which they are us'd to diſcharge blood from the uterus, the abſceſſes, which were already almoſt heal'd, from the turgeſcency of the humours, and the motion thereof, which make their impetus upon the whole body, and eſpecially on the weaker parts, open afreſh, and enlarge their dimenſions, which I remember to have happen'd in the leg of a noble matron, in particular, for many months ſucceſſively.

As we are, therefore, paſſing on to the conſideration of other things, more ſuitable to the preſent occaſion, we cannot avoid thinking of thoſe long, and obſtinate fevers, which leave an enlargement of the ſpleen behind them; and of thoſe ulcers of the legs which are the conſequence of enlarg'd ſpleens. And that thoſe ulcers have been, in fact, join'd with ſuch enlargements, even ſome of the letters, which I have ſent to you, have ſhewn (*e*). But that the ſame has been obſerv'd even from the moſt ancient times, a paſſage of the ſecond book of the Prorrhetica (*f*) teaches us: but take care how you read it, as it is quoted here in the Sepulchretum (*g*), in the ſcholium to the ſixteenth obſervation: "they who have an enlargement of the ſpleen and hæmorrhages, but "not an ill ſmell of the breath, will have foul ulcers of the tibia"; for in the Greek the very words are μήτε αἱμορῤῥαγίαι γίνονται, that is, "nor have a "hæmorrhage from any part," as others have more faithfully tranſlated it: therefore this opinion may, in ſome meaſure, be accommodated to that woman, who had no eruption of blood from the uterus. And as ſhe was of a ſlender habit, that would alſo very well ſuit with her caſe, which is immediately ſubjoin'd in the ſame ſcholium, from the obſervation of Spigelius, "that lean perſons are much more liable to tumefactions of the ſpleen than "fat perſons."

(*e*) Epiſt. 4. n. 30. Epiſt. 12. n. 2.
(*f*) N. 42.
(*g*) Sect. 16.

But

But that theſe tumours are the conſequences of long-continu'd fevers is demonſtrated to you by more than one of my letters (*b*), and confirm'd by more than one obſervation (*i*), in the ſection of the Sepulchretum. To which you may add the obſervation of Chriſtian Vater (*k*), made upon a ſtudent, who, having been long afflicted with intermitting fevers, had his ſpleen enlarg'd to the ſize of a man's head; and, what is remark'd by that excellent anatomical profeſſor Weiſſius (*l*), that "whenever" he lit on very large ſpleens, in the diſſection of bodies, he generally found, upon inquiry, that theſe perſons, when living, had labour'd under a violent fever at ſome time or other, "and that either an intermittent, or a ſynocha continua:" to omit at preſent what I have elſewhere taken notice of, from thoſe celebrated men Hoyerus, and Kramerus (*m*), of the infarction of the ſpleen, after intermittent chronic fevers, and particularly the quartan; whoſe obſervations I could wiſh were not confirm'd by examples amongſt us, alſo, of fevers of that kind, but of ſuch as are badly cur'd. And that ſuch have been obſerv'd by the ancient phyſicians alſo, theſe words of Hippocrates, or rather of Polybus, are a proof (*n*): "this diſeaſe," that is the tumour of the ſpleen, "happens when from fevers, and bad management of theſe fevers, bile or "pituita, or both, have fallen upon the ſpleen." For a viſcus which is of itſelf lax, and cellular, and from which the return of the blood is ſlow, as it is to paſs through the liver, before it enters the vena cava, is extremely liable to tumours, eſpecially if that little ſhare of ſtrength which it has originally, being weaken'd by a diſeaſe of long continuance, and the blood being made inert and ſluggiſh, ſome particles are left therein, which ought either to be corrected, or thrown out of the body.

For the ſluggiſh motion of the blood being increas'd for theſe reaſons, while, like muddy water beſide its channel, it is diverted into the cells of the ſpleen, it of courſe depoſits therein whatever corpuſcles it may contain, which are heavier and more groſs than the conſtitution can bear, and by this means, in part obſtructing its own return, diſtends the cells of this viſcus more and more. And the more the whole ſpleen is diſtended by the diſtention of the cells, ſo much the weaker it is, and for that reaſon more liable to retain, in great meaſure, thoſe fluids which afterwards flow into it. For which reaſon it ſometimes grows out in an incredible manner, ſo that Aetius wrote even formerly, that in ſome perſons "the ſpleen became contiguous to the groin," as you will read in the Scholium juſt now pointed out; except that as he is there ſaid to have aſſerted this in the ſeventh book, and as he compil'd, in all, only four books of medicine collected from the ancients, each of which were divided into four diſcourſes, you muſt look for it in the third book of the Tetrabiblion, diſcourſe the ſecond, chapter the ſixteenth.

This blunder, and that which is ſtill more conſiderable in the ſentence of the Prorrhetica, were transfer'd into the Sepulchretum, by copying the words of Diemerbroeck, and not turning to the authors he has quoted. For he

(*b*) Epiſt. 16. n. 6. epiſt. 20. n. 2. 30. 51. Epiſt. 31. n. 2.
(*i*) 11. 13. 17.
(*k*) Eph. n. c. dec. 3. a. 9 & 10. obſ. 165.
(*l*) Commerc. littr. a. 1745. hebd. 24. n. 1. ad 7.
(*m*) Epiſt. 20. n. 52.
(*n*) De affection. n. 21.

intro-

introduc'd afterwards, as I ſuppoſe (*o*), examples of very large ſpleens, inſiſting upon that which weigh'd three and twenty pounds. But Boſchus (*p*), if I underſtand him properly, had aſſerted that a ſpleen had been found, by his own father, which "weigh'd three and thirty pounds." But among the obſervations that are more modern than theſe, although I do not remember to have read any, in which the ſpleen was ſaid to come near to that weight, yet thoſe which were publiſh'd from Henricus Alb. Nicolai (*q*), and, before, from Maurice Hoffmann (*r*), are by no means to be deſpis'd. For the latter found the ſpleen to weigh fifteen pounds, and the former found it ſtill half a pound heavier; and both of them found it ſo, that the diaphragm, on the left ſide, was driven to the ſuperior ribs; and Henricus ſo that, at the ſame time, the ſpleen hung down quite to the iliac region.

But Preuſſius (*s*), in an infant, ſaw it extended in its magnitude, from the left hypochondrium through the whole ſide, quite to the pubes: and Vercellonus (*t*) ſtill farther, that is to the lower part of the abdomen; and as it could not go beyond this boundary, it was reflected up again, and terminated behind the uterus, in a maſs equal to the ſize of a fiſt. It is true, that which was found by Jo. David Mauchartus (*u*), chang'd into the figure of a cone, did not extend itſelf ſo far; yet it was large, as, being fix'd to the baſis of the diaphragm, it was equal to a large human head in its bigneſs: in its weight, alſo, it did not exceed four pounds with as many ounces; but it contain'd that which makes this obſervation very rare, that is to ſay, ſo great a quantity of water within a kind of coat, like a hydatid, I ſuppoſe, which had occupied all the internal parts of that viſcus, ſo that Mauchartus did not heſitate to call this diſorder "a dropſy of the ſpleen;" for four pints of water burſt forth therefrom.

Thus taking the word empyema in the moſt extenſive ſignification, you may call that an empyema of the ſpleen, which was found by Anthony de Haen (*x*), as that viſcus occur'd to him "full of pus, which was in great "quantity, thick and white;" though by its inflammation it had before been miſtaken for a pleuriſy.

19. Now before I paſs on to other obſervations, from theſe of Valſalva's, I am not willing to omit one from him, which will give you to underſtand, what viſcera beſides thoſe that naturally lie in the hypochondria, may there create very great and even fatal uneaſineſſes; eſpecially if to the diſorders of theſe viſcera, although ſlight in appearance, a convulſion be added, which I do not doubt was added in this caſe.

20. A virgin was ſeiz'd with a violent vomiting and a fever. The former was appeas'd; but the latter remain'd. A violent pain came on under the falſe ribs, by which ſhe was carried off within two days.

In the belly was found a very limpid ſerum. The ſtomach and the inteſtines were very turgid from included air. Both of the kidnies were three

(*o*) Anat. l. 1. c. 16. edit. Patav.
(*p*) De facultat. anat. lect. 2.
(*q*) Commerc. litter. a. 1732. hebd. 33. n. 2. ad 5.
(*r*) Eph. n. c. dec. 3. a. 9 & 10. in append. n. 1. obſ. 5.
(*s*) Earund. cent. 3. obſ. 11.
(*t*) Earund. cent. 7. obſ. 9.
(*u*) Earund. cent. 9. obſ. 41.
(*x*) Apud Swieten comment. in Boerh. aph. §. 958.

times bigger than their natural ſize: but the left contain'd, betwixt its proper membrane and the ſubſtance which lay beneath it, a little quantity of a ſanious matter, and particularly on that part which was turn'd towards the ſpleen.

In the cavity of the thorax was a little water. The lungs were ſound, except that they were diſtinguiſh'd with black ſpots, which were few in number. The pericardium was full of ſerum. From the ventricles of the heart flow'd out a pretty fluid blood; yet in the right, was the beginning of a polypous concretion.

21. The increas'd bulk of the left kidney, and a diſorder therein, at the ſame time, have more than once excited a tumour, or pain, in the hypochondrium of the ſame ſide. And this may be learn'd from ſome hiſtories, which are produc'd in theſe two ſections of the Sepulchretum, as in the ſixteenth, that which we have under article the ſecond, of the twenty-ſecond obſervation, and in the ſeventeenth ſection, two which are read under the ninth article of the thirtieth obſervation, where Ballonius ſays as follows: "they did not ſuppoſe the pain to be nephritic, and yet it was ſo; but the "ſituation of the pain, and of the part, deceiv'd the practitioner." And that this may ſometimes happen on the right ſide alſo, that hiſtory which is given in the ſame thirtieth obſervation, in the firſt place, demonſtrates.

But that which is read laſt in this obſervation ſhows that the ſame thing may happen, not only from the parts which lie below, as the kidnies do, but alſo by the parts which lie above; as, for inſtance, by the ſeptum tranſverſum being overloaded with a quantity of pus, and forc'd downwards: for thus I conjecture that this hiſtory ought to be explain'd, rather than by a kind of conſent, and affinity; as from the ſame ſeptum, when depreſs'd by the force of water, or a thick ſerum, I have already ſhown you (*y*), that a hardneſs and pain have been brought on in the upper regions of the belly. But now, not to recede from the kidnies, and from other parts which lie beneath the hypochondria, I think the obſervation of the celebrated Bonfiglius (*z*) ought to be added, in reading of which attentively, you will readily perceive that an inveterate tumour, that had been formerly felt in the right hypochondrium, was nothing elſe but the kidney, which, by being increas'd more and more in its bulk, had at length fallen forwards from its natural ſituation into the iliac region, where it was found to be five times as big as its natural ſize.

But in regard to other parts, the celebrated Gœkelius (*a*) will ſhow you, that from the omentum, having its bulk enlarg'd by a kind of ſcirrhous fatneſs, wherein the whole ſpleen was enwrap'd, there was a tumour of ſuch a kind in the left hypochondrium, and with ſuch a reſiſtance, that, for this reaſon, the tumour "exactly reſembled a ſcirrhus" of the ſpleen. And Schrockius (*b*), Hurterus (*c*), and Gerbezius (*d*), remark'd a tumour in the other hypochondrium, together with a pain from a ſcirrhus, which adher'd very cloſely to the inteſtines, ileum and colon; or from the colon being rais'd into ſuch a bulk, that by forcing itſelf againſt the ligaments of the liver, it drove

(*y*) Epiſt. 16. n. 26. & epiſt. 30. n. 30 & 31.
(*z*) N. c. cent. 9. obſ. 4.
(*a*) N. c. cent. 6. obſ. 94. ad n. 7.
(*b*) Et cent. 1 & 2. obſ. 186.
(*c*) Ibid. obſ. 184.
(*d*) Et dec. 3. a. 7 & 8. obſ. 186.

that

that viſcus from its natural ſituation, towards the left hypochondrium: or a pain only, which had been falſely imputed to the liver; whereas it aroſe from the meſentery, which was, ſoon after, found to be "eroded" under that viſcus, nearly to the breadth of a ſpan. But let us return to the diſorders proper to the viſcera which lie in the hypochondria.

22. However, as I have, much the more frequently, deſcrib'd to you obſervations of the liver or ſpleen being tumefied, it will, for that reaſon, be ſufficient here, to add to thoſe which I have hitherto produc'd from Valſalva, a few that are common to the tumours of both theſe viſcera.

23. A woolcomber of about forty years of age, came into the hoſpital of Padua for obſtructions, as he himſelf ſaid, of the hypochondria. And that he ſaid what was true, not only the bad colour of his face, and an infirm ſtate of health for a whole year already, and a ſlight fever, with which he was often attack'd, and was not free from even at this very time, demonſtrated, but the application of the hand to both hypochondria, and chiefly to the right, particularly confirm'd. When he ſeem'd to have receiv'd ſome advantage from a courſe of remedies, behold he was ſeiz'd with an acute fever, attended with ſigns of an internal inflammation of the thorax; and by that he was carried off within ten or twelve days.

His body was brought into the college, that I might therefrom begin the anatomical demonſtrations of the year 1746: and as I examin'd the carcaſe, I ſaw that it had a pretty clear appearance on the ſkin, and was not altogether lean, nor were the feet œdematous. The muſcles of the abdomen being diſſected, ſcarcely at the diſtance of two days from the patient's death, and that in the month of January, were lax, and at their lower part inclin'd to a greeniſh colour. Yet the parts which were contain'd in the belly had a natural appearance, if you except the following. The liver was immoderately large; ſo that the very great magnitude of it immediately ſtruck the eyes of every one: and although it had not a bad colour externally, yet, internally, I obſerv'd it to be of a paliſh colour inclining to brown; and, beſides this, univerſally mark'd with certain brown ſpots, if you examin'd it with a ſtedfaſt and attentive eye, either on the inſide or the outſide; and harder than it generally is, which appear'd not only to the fingers, but was alſo evident, by cutting into it in ſeveral parts, and in ſeveral directions. And while I was making theſe inciſions, I alſo obſerv'd this circumſtance, that no yellow point had appear'd any where with any of the ſections of the veins, which is the general mark of the ſmall branches of the hepatic duct being cut tranſverſly, at the ſame time, whether this happen'd from theſe veſſels having collaps'd in ſome meaſure, from the ſmall quantity of bile which was ſecreted in the liver, or rather becauſe the bile was of a more pale and dilute colour, and leſs apt to tinge: and indeed, in the cyſt was but a ſmall quantity of bile, in proportion to the bulk of the liver; the cyſt itſelf was ſmall, and had thin coats; and the bile inclin'd to a kind of cineritious colour.

The ſpleen was twice as big as it naturally is in every dimenſion; but in other reſpects, as far as I was able to judge, it was not to be found fault with. The ſplenic artery, from the origin to the termination, contrary to the general appearance, had nothing tortuous in it in any part, nothing vari-

cous, if I may ſo ſpeak, excepting one place only, about the middle of its length, where it was a little inflected.

On the meſentery had grown a hard body, of the bigneſs of a ſmall cherry, and almoſt of the figure, but unequal, and granulated, on its ſurface, and of a middle nature betwixt bone and ſtone: at one ſide of this body was an arterial and venous branch, which ran very cloſe to it, but did not enter the ſubſtance, going out from thence to the inteſtines, which were at about two inches diſtance from this body. The ileum had that appendix, or diverticulum, if you chuſe rather to call it ſo, which, as I have deſcrib'd it in the thirty-fourth letter (*e*), it will be ſufficient to have ſlightly taken notice of here. For it will be more to the preſent purpoſe, to obſerve what other appearances I ſaw in the belly of this man. The external iliac vein, on the left ſide, near the opening of the internal, was hard, and yet not bony, as the coats were only much thicken'd, in that part, for ſome little extent: and theſe coats being laid open, I ſaw, in the cavity of the vein, on one ſide, where it was perforated with no orifices, ſmall chords protuberating, and a kind of ſmall valves.

But that deſerves our attention ſtill more, which I ſaw in the kidnies, and in their arteries, though it was rather unuſual, than preternatural. Theſe arteries were about nine inches in length, but narrow in proportion to this large extent, except that they were rather wider in the upper extremities. The length of the ſinuſſes, alſo, that receive and ſend out the veſſels, was unuſual; which was the more eaſy to be taken notice of, as that whole part of the ſubſtance of the kidnies was wanting, which ſhould have made up the anterior paries of the ſinuſſes: and for this reaſon, the larger of thoſe branches, that convey the urine into the pelvis, were quite naked, and expos'd, and the ſanguiferous veſſels were expos'd in all that part which is generally buried within the ſinus. But as two arteries, that is the inferior and the ſuperior, and as many veins went to each kidney, the veins went out from the ſinuſſes in ſuch a manner, that the inferior aſcended obliquely into the ſuperior, which was tranſverſe. And the arteries were not join'd with each other, but the inferior, as well as the ſuperior, was carried in a tranſverſe direction, without any obliquity, for which reaſon the inferior did not go to the ſinus, but penetrated the kidney, almoſt at its lower ſide, beneath the ſinus.

From this deſcription you perceive, that both the inferior arteries muſt have ariſen much lower than the arteries of the kidnies generally do: and indeed they did ariſe from the aorta, at not more than the diſtance of an inch above the diviſion into the iliacs; and, what is, perhaps, much more extraordinary, not from the ſides of the aorta, but from the very middle of its anterior ſurface, where they were ſo near to each other, that their orifices were but juſt ſeparated, by a very thin ſeptum: coming out from thence, on both ſides, ſimilar and equal, and being divided into no branches, before their inſertion, they were inſerted as I have already deſcrib'd; whereas the ſuperior arteries, which were a little, but not much, thicker than theſe, dif-

(*e*) N. 16.

fer'd

fer'd neither in their origin, nor in their ramification, from thoſe which we generally ſee.

The inſpection of other parts we could not proſecute with the ſame diligence, as a better body was procur'd in the mean while. For which reaſon we did touch the head.

In the thorax, finally, we found the right lobe of the lungs annex'd to the pleura, and hard: in the pericardium was a bloody water, to the quantity of ſome ſpoonfuls: in the heart, two veins, which ran longitudinally upon its poſterior ſurface, were turgid with blood, and in a manner varicous.

24. Setting aſide the conſideration of the appearances which have no affinity to our preſent ſubject, if we attend only to thoſe that relate to the tumefied ſpleen, and to the tumefied and obſtructed liver, the ſplenic artery, if we are to ſuppoſe that it was not without inflexions in its original formation, may ſeem to any one to have loſt theſe tortuous diverticula, while the courſe of the arterial blood into the hard liver being obſtructed, a greater quantity of it was therefore neceſſarily oblig'd to flow into the ſplenic artery. And how much, when the liver is obſtructed, the ſmall arterial branches within that viſcus are compreſs'd, and how much leſs a quantity of blood they admit, is not only demonſtrated by reaſon, but ſometimes alſo confirm'd by evident obſervation. For the celebrated John Baptiſt Vulpius has affirm'd to me, that he twice happen'd to find the trunk of the hepatic artery ſo dilated, in a body where the liver was obſtructed, that he could introduce his thumb into the cavity.

However, when the liver is thus affected, how eaſily the conſtitution degenerates into a cachexy plainly appears in the man we ſpeak of, from that ſmall quantity of diſcolour'd bile, beſides other things.

But if a very conſiderable diſeaſe occupy the liver, we learn from a great number of obſervations, that, frequently, the conſtitution tends not only to a cachexy, but even to a dropſy. Among which are worthy to be read, thoſe given by the celebrated Roſtius (*f*), and Uſenbenzius (*g*) either on account of the appearances found in the ſcirrhous liver, or on account of its weight. And to theſe you may alſo add that which I ſhall immediately ſubjoin.

25. A porter who ſeem'd to be of a middle age, and who had never been attack'd with any diſeaſe, felt a very conſiderable uneaſineſs in his loins immediately after lifting up a heavy load, which then oblig'd him to lie in bed for two days, and made him ſo weak, for the remaining part of his life, that he could not now lift up even the weight of twenty pounds, without occaſioning a pain in his loins. A month after this accident he ſeem'd to himſelf to hear the agitation of water in his belly, while he turn'd himſelf in bed, and ſoon after to perceive a kind of body, as it were, aſcending from the hypogaſtrium, into the ſcrobiculus cordis, as it is call'd, which, ſtopping there, caus'd the beginning of a very hard and pretty large tumour; with which being afflicted, and with a ſlight fever, at the ſame time, he came into this hoſpital, in the fifth month after his lifting that heavy load, and related all theſe things which I have related to you.

(*f*) Act. n. c. tom. 2. obſ. 178. (*g*) Et Cent. 9. obſ. 27.

It was then certain, that he had a continual, though ſlight fever, which was exacerbated in the night-time, that there was a tumour in the ſcrobiculus cordis, and alſo below the lower ribs, but eſpecially on the right ſide, and that water was extravaſated in the abdominal cavity. In the mean while this extravaſation increas'd, ſo that when I happen'd to have occaſion to go up into the hoſpital, juſt about a month from the time of his coming into it, and being aſk'd to feel the man's belly, I ſcarcely perceiv'd any particular tumour elſewhere than in the ſcrobiculus cordis, the abdominal cavity being ſo greatly diſtended with water.

This tumour was very hard, and very unequal, but free from pain, even when you preſs'd upon it. I inquir'd whether it was troubleſome by its weight? whether there was any pain which was produc'd quite to the throat? and whether he was ever troubled with a cough? To all which queries the patient anſwer'd in the negative. But when I aſk'd him whether the tumour increas'd at that time? He not only anſwer'd negatively, but even aſſerted that it had ſubſided, and was grown much leſs; I ſuppoſe becauſe it was in great meaſure obſcur'd by the increaſing water: and indeed, thoſe who had felt it at other times could not perceive it to be diminiſh'd. The face of the man was ſomewhat pale, but not yellow, nor of a cineritious colour; and even the white parts of the eyes, though I examin'd them very attentively, did not appear to me to have the leaſt yellowneſs.

He lay, for the moſt part, on his back: though he could lie upon either ſide. He was thirſty, but not to any great degree. He drew his breath not quite freely, yet not with any great difficulty. Which circumſtances I remark'd with the more nicety, as I foreſaw that the patient would die in a very ſhort time, and give us the opportunity of examining into the ſtate of his viſcera, for which reaſon I left him with an uncertain, and, in part, a ſuſpended opinion, in regard to the univerſal ſeat of the tumour: and the patient, having his pulſe, at length, become very ſmall, but preſerving his ſenſes perfectly to the very laſt, died in a very placid manner, as he was ſpeaking to ſome perſons around him, in the beginning of April, in the year 1745, about fourteen days after I had ſeen him.

But when the body was diſſected, as it was on the following day, I was ſo much taken up with buſineſs of importance, that I could not attend. However, our Mediavia preſided at the diſſection, in my room: from whom I receiv'd this account on the ſame day.

The body was lean, and no where, unleſs ſlightly in the ſcrotum, and ſtill more ſlightly in the feet, affected with an œdematous tumour. The belly contain'd a great quantity of extravaſated water, not of a diſagreeable ſmell, not thick, nor turbid from a kind of thin membranes, as it were, ſwimming in it, but pellucid, yet inclining to that colour which we ſee in oil of almonds. The omentum being drawn up into the left hypochondrium, was found indeed, but of a greeniſh colour inclining to brown. The ſtomach was ſmall and contracted. The ſpleen was twice as big as it naturally is, externally whitiſh, and internally had ſome white ſubſtances, which, however, were not hard. But the liver was by far the moſt enlarg'd, ſo that ſome of thoſe who were preſent judg'd it to weigh about fourteen pounds. At leaſt it occupied the whole upper region of the belly, and the part which lay next thereto anteriorly,

riorly, although it did not extend itſelf much below the ribs: and it had grown out ſo much towards the left ſide, that the ligamentum ſuſpenſorium, which was in other reſpects pretty thick, being curv'd very much towards that part, the umbilical fiſſure was at the left ſide of the cartilago enſiformis. The whole liver was hard, and diſtinguiſh'd, in ſeveral places, with protuberating ſpots, not narrower than a thumb's breadth, and theſe of a yellow colour; but in other reſpects this viſcus was pallid. Theſe were the appearances externally. And internally, if you except a few portions of the hepatic ſubſtance intermix'd here and there, the whole viſcus conſiſted of a ſubſtance, which could not more eaſily be cut aſunder, than the mammary gland: this ſubſtance was of a white colour, degenerating into yellow, and being preſs'd ſeem'd to emit a kind of purulent ichor. Finally, the gall-bladder was exceedingly ſmall.

26. When a black ſmith, and, in like manner, a woman of whom the celebrated Schmidius ſpeaks (*k*), perceiv'd that ſomething was broken within them, not without a great, or a burning pain in the region of the liver, from exerting themſelves in lifting up great burdens, it appear'd that neither of them was deceiv'd from what was found in the body of the ſmith, and from the circumſtances which happen'd to the woman. But what our porter hurt in his loins, in endeavouring to lift that burden, and what it was which had impos'd upon him, ſo as to appear like a body that was aſcending, although you may happen to conjecture properly, yet you cannot eaſily demonſtrate. This, however, is certain, that as the diſorder, and tumour, of the liver increas'd, the water was increas'd in the belly, whether you ſuppoſe it to have been there before, in any preternatural quantity, or not. For without doubt, the very ſwelling, and weight, of the liver naturally preſs'd upon the trunks of the vena-cava and vena portarum, and a great number of lymphæducts, at the ſame time, while the patient lay continually in a ſupine poſture of body, ſo that out of ſome of theſe being ruptur'd, or if they were ſound, from the mere ſtagnation of the blood, more water would be pour'd out into the cavity of the belly.

A cauſe was alſo added, which made the blood inert and ſluggiſh, I mean the very great diſorder which there was in the liver that was ſcirrhous; ſo that a bile was ſecreted, which was not fit for the purpoſes to which nature intended it; and this bile was in ſmall quantity alſo, as the ſmallneſs of the cyſt confirm'd: for which reaſon neither good chyle, nor good blood, was prepar'd. To this add, that the ſpleen was preternaturally increas'd in its bulk, and diſeas'd in its internal conſtitution: for although we cannot well determine, what is the office of this viſcus in particular, yet we do not doubt but it is, in general, of uſe in preparing one or both of theſe humours. But why in this and the former man, and in ſo many other examples, among which I could reckon not only that infant ſpoken of by Preuſſius (*l*), but alſo the woman whoſe hiſtory is given by Portius (*m*), if the ſame thing were not ſo often ſeen in diſſections; why, I ſay, the ſpleen, and the liver, were found tumid, I do not ſuppoſe, you will enquire, as you very well remember from whence both theſe viſcera receive their blood.

(*k*) Commerc. litter. a. 1734. hebd. 34.
(*l*) Obſ. cit. ſupra ad n. 18.
(*m*) Act. erud. Lipſ. a. 1704. m. Septembr. in relat. ejus opuſculor.

For as both of them have their arterial blood from the ſame cæliac artery, which ever of the two ſhall firſt become tumid, and, for that reaſon, admit a leſs quantity of blood, muſt, of conſequence, force a greater influx into the other. And as the liver receives its venous blood, in part, from the ſpleen, which we ſuppoſe to be intended for the purpoſes of ſecreting the bile, there is no doubt but, if the liver is tumid, a greater quantity of blood will remain in the ſpleen: but if the ſpleen be tumid, a blood of ſuch a kind will be ſent therefrom, as is very unfit for going through the narrow paſſages of the liver, and at the ſame time, very improper for the ſecretion of a well-condition'd bile; ſo that if this be ſecreted in a very viſcid, and thick ſtate, it will be in part obſtructed in the liver, and will itſelf, conſequently, increaſe the bulk thereof.

27. Theſe things, however, and ſome others, which I have advanc'd, in almoſt the ſame manner, in this letter, I would have you admit with ſuch limitations, as to ſuppoſe that the effects I have mention'd, may be the conſequences, if a proper time be given for theſe cauſes to act, and there be no impediment to their action; for they do often follow, as I have ſaid juſt now, but not always. Thus, to illuſtrate our ſuppoſition by examples: Jacobus Sylvius *(n)* diſſected a ſtone-cutter, who had an enlarg'd liver, which was tender, and pale, like a liver that had been boil'd; but his ſpleen was of a cineritious colour, had two ſmall ſcirrhi externally, and internally appear'd as if it had been boil'd. Why was it not alſo enlarg'd? Leſt you ſhould happen to ſuppoſe this to have been owing merely to the tenderneſs, which, counteracting the effects of the increas'd weight of the liver, ſtill preſerv'd an eaſy paſſage for the blood, through this viſcus; know that there were in this man, which is an extraordinary inſtance, "three large branches, "that went from the left emulgent vein, to the ſpleen," through which, as the circulation of the blood now teaches, a great part of the blood, that otherwiſe muſt have paſs'd with difficulty through the liver, and have diſtended the ſpleen, by remaining there, was diverted into the emulgent vein. But whether the ſame three branches, by carrying away the blood from the ſpleen, ſooner than the nature of that viſcus requires, and by depriving the liver of a part of that aſſiſtance, which it receives from the ſpleen, and which is neceſſary to the full performance of its functions, contributed any thing, in a long courſe of time, to thoſe diſorders which were obſerv'd in both the viſcera, you yourſelf will judge.

According to thoſe things, which I have juſt now ſaid, or theſe that I have now hinted at, it will be eaſy for you to explain other examples, as that of Riolanus *(o)*, and of Fantonus the father *(p)*; in which caſes, the liver being indurated, and increas'd in its ſize, the ſpleen was not only not larger than it generally is, but was found to be ſo extremely ſmall, that it ſcarcely weigh'd an ounce, or that the traces of it alone remain'd. For ſuppoſe that the ſpleen was diminiſh'd, whatever the cauſe of this might be; and you already perceive, how much more arterial blood muſt, of courſe, have been ſent to the liver, and how little aſſiſtance, therefore, there muſt have been given to the ſecretion of good bile.

(*n*) Obſerv. adject. Iſagogi anat.
(*o*) Anthropogr. l. 2. c. 16.
(*p*) Obſ. med. anat. 24.

Or ſuppoſe, on the other hand, that the liver is increas'd in its bulk, from ſome cauſe or other, ſo as to occupy the whole epigaſtrium, as in the example of Fantonus, and to thruſt the ſtomach down into the umbilical region: you will then eaſily conceive, how both the ſpleen, which is a ſoft and lax viſcus, and the ſplenic artery, from whence it receives the blood by which it is nouriſh'd, preſerv'd, extended, and dilated to a proper degree, may be at the ſame time compreſs'd: and as this artery paſſes under the pancreas, being affix'd to it longitudinally, you ſee evidently, how much it muſt have been preſs'd upon, in the example given by Riolanus, in which the pancreas was univerſally ſcirrhous, and in its bulk, and weight, was equal to the liver itſelf. For as to his finding remains of the ſpleen, in another body, of the breadth of a finger-nail, this might, perhaps, have been owing to a greater, and more long-continu'd, compreſſion of the ſplenic artery, as he there found the pancreas to be not only ſcirrhous likewiſe, but even indurated like a cartilage.

28. However, to ſay nothing of the pancreas, and return to the ſpleen, and liver, I confeſs there is ſo much mutual commerce, and connection, betwixt both theſe viſcera, that if one be diſeas'd, in conſequence of the other being diſeas'd, there is no reaſon for ſurprize: but on the contrary there is reaſon to wonder, if a diſorder be found in either of them only, as when you read in the Sepulchretum (*q*): "the liver was large, and in many places "hard; .... the remaining viſcera of the belly being in a natural ſtate:" or (*r*) "the liver was almoſt without moiſture, and pallid; .... but the "ſpleen, and kidnies, had a natural appearance." Nevertheleſs, even in a long diſorder, where a greater injury is found in the other viſcera, than in the liver, it by no means follows, that in this alſo the diſeaſe muſt have been of long ſtanding: which I would have to be underſtood chiefly of the ſecond of the obſervations, juſt now pointed out.

We muſt take care, moreover, that we do not, now and then, take ſome appearances which have exiſted from the original formation of the body, for the cauſes, or effects, of diſeaſes: of which kind I ſhould ſuppoſe thoſe "ſeveral inciſions" of the ſpleen to have been, that are mention'd in this ſeventeenth ſection of the Sepulchretum, under obſervation the nineteenth, and which ſeem to be reckon'd among the morbid appearances, juſt as I believe of thoſe "chinks or fiſſures of the liver," which are ſometimes produc'd, in the preceding ſeventeenth ſection of the Sepulchretum, as the cauſes of a pain in the right hypochondrium." Blunders of this kind are eaſily refuted, by a frequent and attentive obſervation of the fiſſures of both, or of one, or other, of the viſcera, which moſt frequently occur in bodies of every kind, and not without ſome utility, as I have ſaid in a former work (*s*).

But, although a reaſon could not be given for all the caſes, in which we read of the ſound ſtate of one of theſe viſcera, being join'd with the diſorder of the other, theſe would not be the only inſtances, which ſeem to happen ſometimes contrary to expectation. For, not to quit the hiſtory of the por-

(*q*) L. 3. ſ. 14. obſ. 36 §. 4.
(*r*) Ibid. obſ. 20.
(*s*) Epiſt. anat. 1. n. 35.

ter, it certainly does not very-well appear, why the patientdid not feel any uneaſineſs from the weight of the liver being ſo much increas'd: nor yet why, among the ſymptoms which I obſerv'd to be abſent, ſome, in particular, could be abſent, in ſo great a depravity of the liver. And without doubt, we ought to take warning from hence, not to be too raſh and haſty in pronouncing any thing for certain, by denying or affirming in ſome caſes. And indeed ſome things occur in medicine, which are ſtill more extraordinary, and ſurprizing, than thoſe I have juſt now hinted at; and which ought, therefore, to render the phyſician more cautious, in forming a diagnoſis, and conſequently in acting.

Two caſes of that kind I will, in this place, communicate to you, as I have receiv'd them from others, ſince they will not be foreign to the preſent purpoſe; for they relate to a morbid ſtate of the two viſcera, which lie in the left hypochondrium, the ſpleen, and the ſtomach. Of the ſpleen our Mediavia obſerv'd as follows, in the living body firſt, and after that in the dead body, about the end of the year 1735.

29. A man of a lean habit, among other diſorders on account of which he lay in this hoſpital, had a tumour alſo in the left loin, where this begins to terminate in the outer ſide of the body, under the loweſt rib. This tumour ſometimes appear'd leſs, and ſometimes bigger, to the eye that examin'd it, yet never was very apparent at any time; but it yielded to the hand that preſs'd it, as if it contain'd a fluid. At length the man ſunk under his diſeaſes.

The belly being open'd, it appear'd evidently from whence this tumour aroſe. For the lower part of the tumid, and very ſoft, ſpleen reaching to that place I have mention'd, and being, at one time more, and at another time leſs, forc'd thither by the flatus of the ſtomach, and inteſtines, caus'd ſuch an appearance in this body, which, as I have ſaid, was very thin, as might eaſily have impos'd upon ſome raſh and inconſiderate ſurgeon, to the great detriment of the patient.

30. In the ſecond book of the predictions (*t*), after many things that are ſaid of thoſe who have large ſpleens, the following words are immediately ſubjoin'd: "but if tumours ſhould alſo come on in the feet, they will even "ſeem to have water. Yet it is neceſſary to examine the belly and the "loins likewiſe." I would have you ſee, therefore, among thoſe who have interpreted the oracles of Hippocrates, whether there is any one, by whom the inſpection of the loins is refer'd to theſe enlarg'd ſpleens, the other ſymptoms of which immediately precede.

But Peter de Marchettis, whom I have already commended, read to me a caſe in the year 1730 (from a letter of a neighbouring phyſician, who was very much eſteem'd by each of us) which relates to the ſtomach: the caſe was as follows, the circumſtances having been all very well-known to the phyſician who wrote, as they happen'd in the place where he reſided.

31. A woman had a tumour form'd at the region of the ſtomach, which being examin'd by the ſurgeon, ſeem'd to him to be coming forwards to ſup-

(*t*) N. 42.

puration;

puration; yet after having applied many things proper to haſten the ſuppuration; he, nevertheleſs, could not bring it thereto. Finally, this was the iſſue of the caſe, that the tumour diſappear'd, the ſkin remaining contracted, where the tumour had been in the form of a cicatrix, notwithſtanding it had not diſcharg'd any moiſture. After this the woman conceiv'd, and the time of utero-geſtation, of delivery, and child-bed, being happily paſs'd over, ſhe being in good health and her milk flowing properly, as in a woman who gave ſuck, and having now reach'd beyond the third month from the time of her delivery, ſhe of a ſudden perceiv'd that a little moiſture diſtill'd from that cicatricula. And on examining the moiſture, found that it was the wine which ſhe had juſt drank. She could alſo, if ſhe endeavour'd to do it, force out by this way ſome of the pudding ſhe had taken in. Yet the final event of the diſorder was that the wound was perfectly heal'd up, and the woman continu'd to be in good health, as the phyſician who was interrogated by other letters from Marchetti, which he wrote with great friendlineſs, in order to ſatisfy me in regard to the caſe, aſſur'd me.

32. You may alſo read many examples of the ſtomach being perforated, the foramen either lying hid within the cavity of the belly, or being open'd externally, in the hiſtory of a virgin who labour'd under this diſeaſe, for ſeven and twenty years, publiſh'd by the celebrated Chriſtian Wencker (*u*); and theſe may be added to the Sepulchretum: for although it was not poſſible to cure any of theſe patients, it was poſſible, however, to diſſect them all after death. But you will find a ſucceſsful caſe, and not unlike that which I deſcrib'd to you juſt now, in the programma which Etmuller the ſon added to his diſſertation, intitled "*de prægrandi pedis inflammatione.*" And as in this programma you may, at the ſame time, ſee every thing that relates to the perfect cure of a ſtomach thus injur'd, ſo that nothing ſhall fall out from thence into the cavity of the belly, I will add nothing farther to this letter, which is already very long, except to entreat you to preſerve your uſual affection for me, and take care of your health.

(*u*) Argentorati a. 1743.

LETTER the THIRTY-SEVENTH

Treats of the Jaundice, and of bilious Calculi.

THE morbus regius, or jaundice, ſo is frequently join'd with the diſorders of the liver, of which I particularly wrote to you in the laſt letter, that in the Sepulchretum, the eighteenth ſection, which profeſſedly treats of this diſeaſe, is with great propriety immediately ſubjoin'd to the two ſections which treat of thoſe diſorders. To the jaundice relates this obſervation of our Valſalva.

2. A young prieſt was ſeiz'd with the jaundice, a little after a kind of perturbation of mind: this diſorder was alſo attended with a pain at the region of the ſtomach, and a vomiting, by means of which he threw up both his food, and his medicines, frequently. After a day or two, the patient was obſerv'd to be unquiet, and in ſome meaſure ſtupid, ſo as to forget every-thing that was related to him. The phyſician did not obſerve any fever, till the cloſe of the third day: at which time it diſcover'd itſelf with great violence, with a delirium, and convulſions of ſuch a nature, that the patient was oblig'd to gnaw every thing with his teeth, and by his great ſtrugglings almoſt overcame the ſtrength of thoſe who were about him: beſides theſe, he was troubled with a vomiting of a darkiſh-coloured matter. In the morning a vein was open'd, from whence the blood ruſh'd forth with impetus: the ſerum of which, when it receded from the coagulating part, ting'd a linen rag, that was dip'd into it, of a yellow colour. The convulſion ceas'd: but the patient lay to all appearance aſleep, ſcarcely mov'd himſelf, and did but juſt ſhow that he felt the cupping-glaſſes which were applied to him. His reſpiration was almoſt natural, except that it was ſometimes ſuſpirious. He died on the beginning of the fifth day.

The belly being open'd, the liver was found to be flaccid, and inclining to a paliſh colour: in the gall-bladder was a darkiſh bile. In the ſtomach was matter of the ſame kind with what he had thrown up, on the laſt days of his diſorder: on its internal coat, about the left orifice, were a kind of red points, at ſome little diſtance from each other. And there were many very ſmall glands, in ſeveral places throughout the belly, which were inflam'd by ſtagnating blood.

The thorax being open'd, the lungs were tumid with air, and free from connexion with the pleura, if you except ſome ſmall membranous bands, which

which had tied the left lobe to the pleura. In the pericardium was a little water. In the ventricles of the heart was concreted blood.

The ſkull being cut open, and the dura mater being incis'd, a little quantity of ſerum iſſued forth: in the interſtices of the ſanguiferous veſſels, which creep through the dura mater, a kind of gelatinous concretion was obſerv'd, but in a very ſlight degree: the cerebrum was very lax, nor altogether of its natural colour, which perhaps had been deprav'd by the tincture of the bile. While the ſpinal marrow was cut through, in the upper part of the vertebral tube, in order to take out the brain, from the external paries of this medulla, a ſerous matter flow'd for a conſiderable time, as if from a lymphæduct being cut through.

3. What effect paſſions of the mind may have in bringing on a jaundice, is not only demonſtrated by frequent obſervations, in the practice of medicine, but evidently confirm'd by the preſent. Nor will this be ſurpriſing, to thoſe who conſider how much the nerves conſent with the paſſions, and how much power the ſame nerves have, in affecting the ſanguiferous, and excretory veſſels, and in affecting the internal ſecretory organ, whatever that may be, and conſequently in impeding, and vitiating, the ſecretions, and excretions, of the humours. Suppoſe, that in ſome bodies the hepatic nerves conſent moſt, or if other nerves conſent alſo, yet that the veſſels of the liver, and the ſecretory organ, yield more eaſily to the action of the nerves; and you will immediately underſtand why a jaundice ariſes in them, from the paſſions of the mind.

Thus in Hoffmann (*a*), you will read of a woman, in whom, "as often "as ever from a preceeding commotion of mind .... new febrile pa"roxyſms came on, the jaundice immediately return'd with all its ſymp"toms." And if you take into the account, certain diſpoſitions of the blood, or of the matter of the bile, which is to be ſecreted therefrom, or of the other viſcera, you will ſo much the more eaſily underſtand the affair, and conceive of the origin of thoſe very violent ſymptoms, which are ſometimes added to a jaundice, and bring on death much ſooner than expected. All which circumſtances may not only be perceiv'd, in the obſervation that I have given you of the prieſt, but may alſo be illuſtrated, by examples that are in great meaſure ſimilar. The firſt of which was related to me, when I reſided at Bologna, for there it had happen'd, and that not many years before, by grave and learned men, and confirm'd by Valſalva himſelf, who had been preſent at the diſſection.

4. A very ingenious young man who was ſet apart for learning, and the prieſts office, was greatly terrified by a fierce and violent man, who held a muſket to his breaſt, unexpectedly, and threaten'd to ſhoot him. The day after he became icteric, and ſoon after that delirious ſo as to know none of his acquaintance, but cried out every now and then, oh vile man! and then being ſeiz'd with very great convulſive agitations, ſo that he could ſcarcely be held by the hands of many perſons, he died within four and twenty hours from the beginning of his delirium.

The diſſection of his body ſhow'd nothing that was worthy of remark, except

(*a*) Medic. rat. t. 4. p. 4. c. 12. obſ. 5.

that

that the ſanguiferous veſſels, which creep through the pia mater, were, for the moſt part, diſtended with black blood.

5. This hiſtory we might have put in the number of thoſe which relate to deliria, or even to convulſions. But becauſe the jaundice appear'd firſt of all the diſorders which came on, in conſequence of the fright, I choſe rather to give it you under this head. The jaundice ſeems to have been brought on by a contraction of the hepatic nerves: and the matter of the bile being, in great meaſure, retain'd in the blood, becoming acrid, and greatly affecting the brain, as in a young man, and a man given to letters, ſeems to have brought on all the other ſymptoms.

6. We will not ſearch after other examples, among medical writers, which are to be compar'd, in many things, with the example of Valſalva (*b*), as we have two here in the Sepulchretum (*c*), one of Ballonius, in a young man, ſon of the Count de Chaulney, and another of Guarinoni in the Cardinal Sforza. This latter icteric patient had at firſt no fever, but what was latent, ſo that the phyſicians did not attend to it, till after it became more violent, when being ſeiz'd with a ſlight delirium, and afterwards with a freſh increaſe of fever, with a very great toſſing of body, and not long after with two ſudden epileptic paroxyſms, and, finally, three days before death, being attack'd with various convulſions, he was nevertheleſs carried off gradually, and gently; the liver, and almoſt all the other parts of the body, being ting'd of a yellow colour, to a very great degree, and the lungs being in the ſame ſtate, in which they are generally found, in thoſe who have been long excruciated with a difficulty of breathing, at the time of their death.

But the young man, from a lively and good-natur'd diſpoſition, being made moroſe, and melancholic, and being ſuddenly ſeiz'd with the jaundice, after fifteen days, when no ſuch thing was thought of, gnaſh'd with his teeth, and was convuls'd in the night; was in an extaſy as it were, and after great howlings and convulſions died: the brain being found in ſuch a ſtate, that the cauſe of death did not ſeem to have been there, the lungs being very much diſeas'd, but the liver ſtill more, ſo that it was ὑπόχλωρον as it were; for thus the word ought to be written, and thus it is written by Ballonius, as you will ſee by looking into his ſecond book of the Epidemics, which is quoted (*d*), not in page two hundred and forty four that is pointed out, but in page two hundred and fifty eight; and as this word ſignifies greeniſh, or paliſh, you plainly ſee that this young man agreed with the prieſt of Valſalva, in this colour of his liver alſo. And they all agreed in that ſtupor of mind, which Ballonius calls a kind of extaſy, or trance, Guarinoni *levis deſipientia* or a ſlight ſuppreſſion of the ſenſes, and Hippocrates, or at leaſt the authors of the prædictiones (*e*), and coacæ prænotiones (*f*), μώρωσις, and have taught to be bad "from a jaundice:" interpreters render it by the word *fatuitas*, which ſignifies a ſtupidity, or dullneſs, of the internal ſenſes, who are follow'd by Zachias, in an obſervation that confirms this, and is tranſfer'd into the Sepulchretum (*g*).

(*b*) Supra n. 2.
(*c*) Obſ. 6. & in additam. obſ. 5.
(*d*) Edition quæ una tunc erat, & diu fuit, pariſienſ.
(*e*) L. 2. n. 4.
(*f*) N. 2.
(*g*) Obſ. 7.

But

But if you enquire, why there was not a furious delirium in all theſe patients, though there were convulſions, there is no doubt but this may be accounted for, and in ſome meaſure from the different age of the patients, the different temperature and diſpoſition of the blood, bile, and viſcera. Thus in the cardinal, the blood was fluid, and found without any coagulum in any part, of which kind Boerhaave (*h*) affirms it to be, in icteric bodies, ſo that "when taken from a vein it does not coagulate:" but in the prieſt of Valſalva, it had not only been concreted, when taken away from the vein in a proper veſſel, but was alſo found to be concreted in the ventricles of the heart; for which reaſon, the ſtagnating blood appear'd about the ſtomach, in the form of rediſh points, and here and there throughout the belly, like many ſmall glands which were inflam'd: and that blood of this nature has been ſometimes found by anatomiſts, in the heart of other icteric patients, the obſervation of Zachias, which I have already pointed out, and another likewiſe of Bartholin, which you have here in the Sepulchretum alſo (*i*), ſufficiently demonſtrate; not to mention here my obſervation upon the potter, who was in great meaſure icteric, and whom I have deſcrib'd to you on a former occaſion (*k*), or another of Valſalva, on that icteric girl (*l*), which ſtill more deſerves our attention, becauſe, though, except the mucous concretion in the heart, the remaining part of the blood was fluid, yet when expos'd to the air it coagulated.

But to this diſpoſition in the blood to concrete, other cauſes muſt be added, both in this fluid itſelf, and in the brain, in order to bring on a delirium. And yet it is of no great importance, if the brain, not even at this time, nor when there were the moſt violent convulſions, appears to be injur'd. For that which was the cauſe of delirium therein, may eſcape the penetration of the eyes: and from the nerves being irritated, even on the outſide of the brain, or from an irritation on the ſpinal marrow, which we muſt ſuppoſe to have had this effect in that prieſt, horrible convulſions may ariſe.

7. However, the brain was not found to be altogether uninjur'd, in that body, whether you attend to that which was obſerv'd in the diſſection of the meninges, or even the very colour of the brain, which was not entirely natural, and was readily ſuppos'd, by Valſalva, to have receiv'd a tincture from the bile. For notwithſtanding the ſubſtance of the brain is itſelf found to be yellow, ſometimes in this diſeaſe, I do not, however, remember to have read many obſervations, wherein it was ſo found, perhaps by reaſon of the extreme ſmallneſs of the veſſels, which go to the internal ſubſtance of the brain, in the firſt place, and in the ſecond place, perhaps on account of their rarity. And this at leaſt I can ſay, that ſome time ago, when I had, according to cuſtom, a great number of heads in the theatre, in order to give the anatomical deſcription and demonſtration of the brain, obſerving a yellowneſs of the face, of the ſkin in other parts, and of the membrana conjunctiva of the eyes, in one of them, I inquir'd to whom it had belong'd, and found that it was the head of a man who had been aſthmatic, and jaun-

(*h*) Prælect. in inſtit. §. 773.
(*i*) Obſ. 24.
(*k*) Epiſt. 7. n. 11.
(*l*) Epiſt. 10. n. 7.

die'd,

dic'd, and had died the day before: through the external ſurface of the pia mater, I ſaw, in ſeveral parts, conſiderable ſpaces of a yellow colour, inclining to greeniſh; yet ſoon after, when the brain was diſſected, I found the colour therein to be the ſame as it naturally is.

Again, when a like occaſion was offer'd afterwards, notwithſtanding I found the ſmall quantity of water, in the lateral ventricles of the brain, to be of a yellowiſh colour, and the plexus choroides ſomewhat inclin'd to that colour, and the pineal gland itſelf, in other reſpects very ſhort, and pretty hard in its body, and having a ſmall ſubſtance adhering to its baſis anteriorly, not ſandy, nor yellow, but white, and towards its upper part having ſomething in it like blood, or a ſanguiferous veſſel; I ſay, notwithſtanding I ſaw this gland inclining from its uſual cineritious colour, to an obſcure kind of yellow; yet all the remaining parts, for I diſſected them, preſerv'd their native colour, ſo that whatever was medullary, I found to be extremely white. So alſo here in the Sepulchretum (*m*), after a long-continu'd jaundice, you will ſee that the ſubſtance of the brain was very white; although not only the meninges, and particularly the dura mater, but the cranium alſo, externally, and, in part, internally likewiſe, was yellow.

For this diſeaſe ſometimes tinges the very bones with a yellowneſs, which, as ſome aſſure us, can never be waſh'd out from the ſceleton. How yellow the bones were in an icteric fœtus, the obſervation of Kerckringius ſhows, which you will alſo read here in the Sepulchretum (*n*): nor is it to be wonder'd at; as, inſtead of blood, he found a yellow humour like gall, of the ſame kind with that which was found by Veſalius, in like manner, in Martellus a nobleman of Florence, as you would learn from this ſame ſection of the Sepulchretum, if his diſſection, which is given imperfectly twice over (*o*), were once fully deſcrib'd, as it is in another place (*p*).

However in all theſe places you ſhould read Martellus, inſtead of Marcellus, which is falſly tranſcrib'd: and ſuppoſe that Van Helmont (*q*), himſelf, had lit on obſervations not unlike theſe, when in the meſenteric veins of two icteric patients, he ſaw that appearance, from whence he ſuppos'd "an excremental virus, or a yellow and ſtercoreous cruor, or a yellow liquid "excrement, the conſequence of a ſecond digeſtion, which was preternatu-"rally taken up into the veins, and diſpers'd through the whole body," to be the occaſion of the jaundice; whereas it was a bile, which, by reaſon of its having not been ſecreted from the blood, in a proper proportion, either on account of its great plenty, or on account of the diſeaſe of the liver, as in Martellus, abounds at length, therein, to ſo great a degree ſometimes, that the blood which is taken away, and the urine which is then diſcharg'd, appear to be perfectly like each other (*r*); and that not only in perſons where the diſeaſe is to prove fatal, but even frequently in thoſe who are to eſcape (*s*), which happen'd to them, or, at leaſt, to that icteric patient in whom, as Baglivi (*t*) relates, "inſtead of blood, yellow water only, flow'd out from "the noſtrils, and from the cupping-glaſſes, which were applied to the ſca-

(*m*) Obſ. 3.
(*n*) Obſ. 34.
(*o*) Obſ. 8. §. 4. & obſ. 20.
(*p*) L. 2. ſ. 11. obſ. 36. §. 1.
(*q*) Vid. in hac Sepulchr. 18. ſect. obſ. 26.
(*r*) Vid apud Hoffmann. ſupra ad n. 3. cit. cap. 12. §. 4.
(*s*) Ibid.
(*t*) De experim. circa bilem.

"rifications,"

" rifications," juſt as we read in Lower (*u*) of the recovery of that young man, who, having had a large effuſion of blood from his noſtrils, and being well-ſupported, in the mean while, with broths, began at length to have a fluid diſcharg'd from the ruptur'd veſſels, which was more like broth than blood.

8. But among theſe parts which are obſerv'd to be the moſt eaſily, and moſt frequently, ting'd with a yellow blood, are the adipoſe membranes in particular, and thoſe which are call'd *conjunctivæ* in the eyes. Valſalva ſuppos'd the fat to be the moſt prone of all the parts to contract the ſaffron-like colour, where the ſerum of the blood is only a little yellow. For he had found the fat to be of this colour, in many who were not affected with the regius morbus, and eſpecially in three bodies, which he diſſected almoſt at the ſame time, that is to ſay in a hydrocephalous patient, in a man who had been wounded, and in another who had been carried off by an ardent fever.

But this yellowneſs is ſo obvious in the white of the eye, in patients labouring under that diſeaſe, that the ancients ſeem to have been perſuaded, thereby, to ſuppoſe that all objects appear yellow to thoſe who have the jaundice, which Hoffmann (*x*) ſays, is call'd into queſtion, by our Mercurialis in his *Prælectiones Bononienſes*, by which he meant perhaps to ſay in his *Prælectiones Patavinæ* (*y*), or rather, in his *Lectiones variæ* (*z*). For in theſe writings, having brought the teſtimonies of Varro, Lucretius, Sextus Empiricus, Caſſius the phyſician, and even of Galen himſelf, all of which affirm this circumſtance, he put in oppoſition thereto the tacit teſtimony of other medical writers, who are ſilent upon the ſubject, and his own repugnant obſervation, in a great number of icteric patients. And he might have join'd with his own obſervation, a great number of others, without doubting but he would have of thoſe who ſhould ſucceed, by much the greateſt part, aſſenting to his doctrine.

At leaſt, even lately, although after Sydenham (*a*), Boerhaave alſo (*b*), had written the ſame as thoſe ancients, that very learned man, Haller (*c*), has confeſs'd " that he did not find evident experiments to prove this obſervation," nor had he read, " that the cornea had been found yellow," in icteric bodies; and that not only a ſlight change of colour, in the humours of the eye, but a very great one, was requir'd, in order to produce this effect: as, for inſtance, when from blood being extravaſated into the aqueous humour, according to the obſervation of St. Yves, the light appear'd to be red. And, indeed, Boerhaave ſeems to me, when he aſſerted this a ſecond time (*d*), and produc'd another obſervation of his own very much ſimilar to that of St. Yves, to have thought " that a little bile mixing itſelf with the aqueous " humour," might be compar'd with blood being extravaſated therein. But it probably happens, from the extreme ſmallneſs of the veſſels, going to the humours of the eye, as has alſo been ſaid of the internal part of the cerebrum (*e*), that a tincture of the bile does not often reach thereto.

(*u*) Tract. de corde c. 2.
(*x*) §. 4. modo cit.
(*y*) L. 1. c. 32.
(*z*) L. 6. c. 12.
(*a*) Proceſs in morb. curand. ubi de ictero.
(*b*) Prælect. ad inſtit. §. 544.
(*c*) Adnot. ad eum locum.
(*d*) Prælect. modo cit. §. 840.
(*e*) N. 7.

To me, at leaſt, when I formerly diſſected the eyes of an icteric woman, no appearance of yellowneſs appear'd in any of the three humours: nor yet in the tunica cornea: which coat in this body, as in other icterical bodies, and particularly in that potter alſo, of whom I ſpoke above *(f)*, though I examin'd it accurately, and, at the ſame time, when there was a great yellowneſs in the neighbouring tunica adnata, I could never find to have any yellowneſs in it. Yet it may ſometimes happen, though very rarely, that objects appear yellow in this diſeaſe, that is to ſay, if the tunica cornea be univerſally ſaturated with bile, and not "then only, which even Mercuria-" lis grants, but alſo if the humours of the eyes are, at any time, ting'd with a very great yellowneſs;" one or the other of which, or, if you pleaſe, both, you may ſuppoſe to have taken place, in the two examples, that Hoffmann *(g)* teſtifies his having ſeen, in favour of the opinion of the ancients; and in a third, in like manner (for I do not remember to have read any more) which is added by the celebrated Scardona *(h)*.

9. And there may be in the eyes of ſome perſons either a greater number, or a greater diameter, of the ſmall veſſels going to the tunica cornea, and to the humours, and, at the ſame time, in the blood of theſe perſons, a matter of the bile which is more fit to pervade and tinge theſe ſmall veſſels, whether this depends upon the nature, and properties of that matter, or on its quantity. For we ſee after it is ſecreted, and depoſited in its veſicle, that it paſſes more eaſily through the membranes of this reſervoir in ſome bodies than in others, and, in like manner, that it tinges the contiguous parts in ſome bodies with a very deep and ſaturated colour, and in others with a very ſlight one, or with none at all.

That is to ſay, the blood, from whence it proceeds, if you chooſe to expreſs yourſelf in the words of Willis, which you ſee produc'd here in the Sepulchretum *(i)*, "is too much inclin'd to a ſulphureo-ſaline dyſcraſia," in "ſome, and in other has "the ſulphur too much depreſs'd:" for which reaſon alſo, as the former are very prone to the jaundice, ſo the latter, ſays he, "are perfectly free from this diſeaſe," as he ſaw in many cachectic and phlegmatic habits, although "labouring under an obſtruction, and indu-"ration of the liver, in reſpect to moſt of its ducts." Which hypotheſes, however, we muſt admit with caution, or wait to diſtinguiſh the times, and the changes, which the jaundice itſelf brings on, leſt you ſhould be afterwards ſurpriz'd, when you read, in the ſame place, the obſervations of Hildanus *(k)*, or de Graaf *(l)*. For the former aſſerts "that a pituitous "and cacochymic patient had, at times, labour'd under the jaundice "for ſome years together;" and de Graaf, that the bile of an icteric body was "entirely ſerous, and ting'd with ſo ſlight a yellowneſs, that the linen "rags, which were dip'd into it, receiv'd ſcarcely any yellow colour there-"from."

But in regard to the quantity of that matter, the nature of which I have ſpoken of, it is ſurprizing how great an abundance thereof may be in ſome

(f) N. 6.
(g) §. 4. cit.
(h) Aphor. de cognoſc. & cur. morb. l. 3. c. 10. comm. ad n. 8.
(i) Schol. ad obſ. 1.
(k) Obſ. 8. §. 13.
(l) Obſ. 10.

bodies, if to that which the native conſtitution of the body, the time of the year, foods, and drinks, and other things of that kind, which happen to agree in one effect, have accumulated, another be moreover added; as, for inſtance, if a fever, if immoderate exerciſe in the ſun, if poiſon, even that which is introduc'd into the blood by the bite of a venomous animal, and, finally, if any thing elſe of that kind, ſuddenly let looſe thoſe particles of ſulphur alſo, which had been more conſtricted, and depreſs'd, in the blood, and carry them away to the liver, ſo that there are, now, more bilious particles, than it is poſſible for this organ to ſecrete.

There is, beſides, another method ſtill more known, by which the matter of the bile may be increas'd in the blood; as, for inſtance, when little, or none of that matter, which is in the blood, is ſeparated therefrom, either on account of ſome diſorder of the blood itſelf, or of the internal ſecreting organ, or on account of the paſſage of many branches of the hepatic duct, or of the trunk itſelf, or of the ductus communis being obſtructed. For this being obſtructed, although what is already ſecreted does not return into the blood, as many go on to think, yet freſh bile cannot be ſent into the full and diſtended ducts; and, therefore, as the matter of the bile is not carried away from the blood, in the ſame proportion as it is increas'd therein, by the concocted aliments, it muſt, of courſe, be augmented more and more every day, and abound.

10. And in this way that I have ſpoken of, it may be obſtructed by more rare or more frequent cauſes. In the number of the more rare are thoſe which you read here in the Sepulchretum; as, for inſtance, the ductus communis reduc'd to the narrowneſs of a capillary veſſel *(m)*, or contracted into itſelf, like a ſolid chord *(n)*, and indurated *(o)*, or altogether ſolid and bony *(p)*, or compreſs'd by ſome glands which lie round about it *(q)*. And to the more frequent cauſes, in the firſt place belong convulſions, and the *criſpatures* ariſing from hence, which are propagated quite to the beginnings of the ſmall branches of the hepatic duct, conſtringing and ſhutting them up, as they are the narroweſt. And though this effect thereof cannot, from the very nature of the cauſe, fall under the notice of the ſenſes, yet it is ſo conſentaneous to reaſon, that we may, without any ſcruple, make uſe of this hypotheſis, to explain thoſe jaundices, which have their origin, either from violent affections of the mind, or from pains.

There are, alſo, very learned men, who thus explain the jaundice that is brought on by the bite of the viper, from whom I ſhould not diſſent, if the inteſtinal fæces are but white at that time, as the ſtrong conſtriction of the orifice of the ductus communis, from convulſion, which they ſuppoſe, requires: but if they continue to be yellow, and even yellower than uſual, I ſhall then go on to underſtand and explain the caſe, in the ſame manner that I juſt now told you *(r)*, before any obſtruction of the paſſages was ſpoken of.

Moreover, among the more frequent cauſes, are to be number'd the obſtructions happening in the other veſſels, as well as in the biliary veſſels,

(*m*) Obſ. 14.
(*n*) Obſ. 17.
(*o*) Obſ. 25. §. 7.
(*p*) Obſ. 16.
(*q*) Obſ. 11.
(*r*) N. 9.

though it is my intention, chiefly, to conſider the latter in this place, whether the obſtruction of theſe tubes is made by ſome particles being ſecreted with the bile, which are groſſer and more viſcid than they ought to be; or is owing to calculi generated from theſe, and from the bile, by which the branches of the hepatic duct, or the trunk itſelf, or the ductus communis, are ſtuff'd up. And I do not ſay, the cyſtic duct, for this reaſon, becauſe the obſtruction of this paſſage is not able, of itſelf, to impede the paſſage of the bile from the liver to the inteſtines; although there have been many in former times, and are ſome even in ours, who, in ſpite of the admonition of Wepfer (*s*), "that a jaundice did not follow the obſtruction of the neck of "the gall-bladder, unleſs the ductus communis, alſo, is obſtructed," have themſelves ſuppos'd that men became jaundic'd, not only from a calculus ſticking in the cyſtic duct, but alſo from a calculus in the cyſt.

In regard to which opinion, that you may plainly perceive what is to be thought thereof, whatever remains of this letter (and a great part of it does remain) will turn upon the conſideration of bilious calculi; ſince thoſe things which I have hitherto hinted at may be ſufficient for you to attain to moſt of the other cauſes of the morbus regius, and, at the ſame time, to open a way to thoſe things which remain to be ſaid on the ſubject of bilious calculi, either when within, or on the outſide of, the liver.

11. Theſe calculi are generated in the liver, "very frequently," and found in diſſections, according to what Platerus aſſerts in the Sepulchretum (*t*), and Henenius (*u*), who ſays they are "often ſo large as would ſcarcely be cre-"dible." To both of whom I will not deny but it might have happen'd ſo. But as to what Matthiolus has ſuppos'd, in dependance upon certain reaſons (*x*), that ſtones are generated "in the liver very frequently, as they "are in the kidnies," I confeſs if I attend to the almoſt innumerable diſſections of the human liver, made by Valſalva, and by me, I cannot readily aſſent to his opinion. For although both of us have found calculi in many kidnies, it never happen'd to me to find more than one in the liver formerly: and Valſalva never found one, in all his diſſections, that I know of.

But when I ſay theſe things, I mean no more than to conſider that compariſon betwixt the calculi of the kidnies, and the liver, as I am by no means ignorant, even from the Sepulchretum itſelf, by how many eminent men they have been found, or taken notice of, in the liver. For beſides thoſe three whom I have mention'd, I ſee that the names of our Fallopius (*y*), Scaligerus (*z*), Trincavellius (*a*), Dodonæus (*b*), Camenicenus (*c*), Peucerus (*d*), Blaſius (*e*), Heerius (*f*), Dobrzenſkyus (*g*), for ſo his name ought to be written, are produc'd: to which I could add others, and among theſe Columbus (*h*), Foreſtus (*i*), and Reverhorſtius (*k*): none of whom, however, has ſuppos'd ob-

(*s*) In additam. ad hanc 18. Sepulchr. ſect. obſ. 4.
(*t*) Sect. 17. l. hujus 3. ſchol. ad §. 1. obſ. 13.
(*u*) Obſ. cit. §. 2.
(*x*) Sect. hac 18. ſchol. ad §. 12. obſ. 8.
(*y*) Obſ. 13. cit. §. 6.
(*z*) §. 4.
(*a*) §. 7.
(*b*) Sect. 18. cit. obſ. 4.
(*c*) Ibid. obſ. 8. §. 12.
(*d*) Cit. obſ. 13. §. 3 & 8.
(*e*) 9.
(*f*) 10.
(*g*) Sect. 16. obſ. 5.
(*h*) De re anat. l. ult.
(*i*) L. 19. obſ. med. 14.
(*k*) Diſſert. de mot. bilis §. 52.

ſervations

ſervations of this kind to be frequent. If you examine each of theſe authors ſeparately, you will, perhaps, be ſurpriz'd, that except Dodonæus, Camenicenus, and Dobrzenſkyus, there is not one who makes mention of the jaundice in theſe patients, or even deſcribes the ductus communis as ſhut up with a calculus, or the liver full of ſmall ſtones.

But you will ceaſe to wonder, when you attend to this circumſtance, that it is not ſufficient, in order to ſhut up all the paſſage of the bile, that a few and ſmall calculi have been form'd in the liver, nor even that large calculi have been form'd there, unleſs they are lodg'd in ſuch a part as to beſet the larger branches of the hepatic duct, and entirely ſhut them up, either by compreſſing or obſtructing them, which may be alſo brought about by ſmall and innumerable calculi, "filling" the whole liver "on every ſide," as Dodonæus ſays, not lying at a diſtance from each other, "in a ſcatter'd way," as was ſeen by Foreſtus; for when they adhere in all the ſmaller branches of this duct, they produce the ſame effect as if they ſtop'd up the trunk itſelf.

12. But I have ſaid that the paſſage of the bile is prevented from calculi, either by means of compreſſion, or obſtruction. For if any one ſhould ſay that calculi are ſometimes form'd in the little glandular bodies of the liver themſelves, and that to this claſs, without doubt, belong'd thoſe leſſer calculi, which Riedlinus (*l*) ſaw "on the external ſurface of the liver," I ſhould not conteſt his opinion, although I believe they are more frequently generated in the very branches of the hepatic duct, as thoſe who have very minutely trac'd them, have found. And as, certainly, nothing had happen'd more frequently to Ruyſch (*m*), in oxen and ſheep, than to find calculi in the pori biliarii, ſo nothing happen'd "more rarely," than to find theſe concretions in the "parenchymatous ſubſtance of the liver itſelf;" ſo that, although he very attentively "diſſected away all the fleſhy part," in more than a hundred livers, yet he found in one only, a calculus "buried in the paren-"chymatous ſubſtance, and not at all affix'd to the porus biliarius."

Nor can I ſuppoſe, that the ancient obſervations of Platerus (*n*), of hepatic calculi reſembling "a tophaceous concretion, ramified in the manner of coral, "and hollow internally," are to be refer'd to any other part, than to the ſame biliary branches, eſpecially as I read Gliſſon (*o*) expreſsly aſſerting, that ſimilar obſervations "of tubuli of ſo great a length, that if they could "but have been taken out in their perfect ſtate, they would, like coral, "have reſembled a great number of the ramifications of the porus biliarius, "in one continu'd ſtony ſeries," were made by him on the livers of oxen, and even within the ſame pore or duct. The branches of which Reverhorſt, alſo (*p*), found to be internally beſet with a calculous cruſt, in the body of a man.

Nor have I found calculi, in the human liver, in any other place than in theſe branches (*q*). Nor do I ſuppoſe that thoſe ſtones, which by Columbus (*r*), and Camenicenus (*s*), were ſuppos'd to be found in the vena

(*l*) Eph. n. c. cent. 3. obſ. 45.
(*m*) Obſ. edit. cum dilucid. valvular. in lymphat. 24.
(*n*) Schol. cit. ad obſ. 13.
(*o*) Anat. hep. c. 7.
(*p*) §. 52. cit. ſupra ad n. 11.
(*q*) Epiſt. anat. I. n. 43.
(*r*)
(*s*) Locis cit. ad n. 11.

portarum,

portarum, had any different ſituation: yet my reaſons for thinking thus, although not ſufficiently attended to by ſome authors of eminence, as I have already given them on a former occaſion (*t*), I ſhall not repeat here. Theſe calculi, therefore, when at length from tubular bodies, by continual and freſh accretions of ſimilar matter, they are made perfectly ſolid, as happens in aquæducts, muſt, without any doubt whatever, occupy the whole paſſages whereof I have ſpoken, and prevent the tranſit of the bile.

13. I have alſo ſaid this; that calculi of the liver, though large, do not bring on a jaundice, is not to be wonder'd at, unleſs they are in ſuch ſituations as neceſſarily to obſtruct theſe paſſages. And I believe that this diſeaſe was preſent, for I cannot now poſitively affirm it, in a certain man, whoſe liver had a ſtone in the center of the concave ſurface, of the form and magnitude of a pigeon's egg, as an anatomical friend of mine, who had diſſected the body, inform'd me by letter, many years ago. But I do not wonder that this diſorder had not been obſerv'd in three women, who, although they had a much larger ſtone, or a greater number of concretions, and more heavy ones, within the membrane of the liver, nevertheleſs, had them in ſuch a ſituation, that they ſeem'd to be rather on the outſide of the liver, than within its ſubſtance: and this was the reaſon I did not make mention of them above. For that membrane being drawn away from this viſcus, by the included weight, and being extended downwards, had form'd a ſacculus in two of them of the length of a ſpan; for in the third it was deſcrib'd only as a follicle, pendulous downwards.

This laſt obſervation is from Benivenius (*u*), and is totally different, as you will eaſily perceive by comparing them, from the ſecond, which is given in the Sepulchretum (*x*), from the third chapter of his book. And a ſimilar obſervation to his; except that in the ſacculus not many calculi were contain'd, but one large calculus, only, was included, together with a great quantity of glutinous humour, and that the woman never complain'd of any thing but of a heat in her liver; the obſervation of Georgius Greiſelius (*y*), is ſubjoin'd. And it was in conſequence of bearing theſe examples in my mind, and obſerving therefrom, that beſides the gall-bladder itſelf being enlarg'd, another kind of cyſt, diſtended likewiſe with a fluid, might ſometimes hang below the liver, which, although it was entirely preternatural, would, nevertheleſs reſemble this natural cyſt; it was in conſequence, I ſay, of reaſoning from theſe examples, that in the caſe of Laurence Bacchetti, formerly a phyſician at Padua, the hiſtory of whoſe diſeaſe, and diſſection, two other learned men have publiſh'd, ſince Dominic Militia (*a*), I carried myſelf with ſo much caution, as not to affirm any thing for certain, though I made no ſcruple to declare my opinion.

This gentleman had a tumour hanging below the liver, which you immediately felt by applying your hand to the abdomen: it was globular, and moveable, ſo that you could eaſily bring it towards the right ſide, or towards the left, by means of the hand with which you laid hold of it. When different phyſicians ſeem'd to have different opinions, as you will read

(*t*) Epiſt. 1. cit. n. 49.
(*u*) De abdit. nonnull. &c. c. 94.
(*x*) Sect. 17. obſ. 13. §. 1.
(*y*) Ibid. §. 11.
(*a*) De morb. exitial. nob. virgin.

in

in Militia, who declares the ſeveral opinions of all; to me, who ſaw him once after others, this tumour ſeem'd to be the gall-bladder, enlarg'd by an immoderate diſtenſion of fluid, and produc'd downwards, which I declar'd to Dominic Stephanelli, a phyſician, and friend of the patient, who with great politeneſs attended me home, and very earneſtly deſir'd my opinion; yet I made this declaration in ſuch a manner, as to affirm nothing for certain. What I had thus declar'd was ſo evidently confirm'd by the diſſection, that although the declaration might be paſs'd over by ſome, yet the appearance itſelf could be conceal'd by no body.

I had ſeen the ſame thing before, and particularly in an old man, from whom I had already deſcrib'd it, in the firſt of the Epiſtolæ Anatomicæ (*b*). And I remember'd to have read of it very frequently, and not only among the ancients, as when Veſalius (*c*) found, in Martellus, the ſame cyſt, "of the "bigneſs of two fiſts," or when Fernelius (*d*) ſaid that it is ſometimes diſtended by exuberant bile, "into a very large ſize;" but among the more modern authors alſo, as, for inſtance, in Zwingerus (*e*), who ſaw it "about ſix times "larger than is natural," but particularly the younger du Verney (*f*) and Yungius, whoſe obſervation of one of a ſtill more monſtrous ſize, is taken notice of by Abraham Vaterus (*g*); ſo that after this I do not think it worth while to point out thoſe which have been ſince produc'd, nor yet to inquire how great a cyſt was found by Lanciſi, which, by reaſon of its very remarkable length, Pacchioni intended to deſcribe, as he expreſſes himſelf in a letter which he wrote to me in the year 1710. Although two obſervations, which I lately read in the writings of the very illuſtrious Van Swieten (*h*), are by no means to be neglected: the firſt from thoſe of the illuſtrious ſociety at Edinburg, who found this cyſt to contain eight pounds of bile, and that in a boy not more than twelve years of age; the ſecond made by himſelf, who, in the body of a woman, found the ſame cyſt to be ſo diſtended, as to reach quite to the right os ilium, and this cyſt had protuberated, by its own bulk, betwixt this bone, and the lower ribs, even before her very lean carcaſe was cut into.

But it was alſo found to be extended, in a Polonian ſenator (*i*), "to ſo "ſurprizing a degree," that in the living body, "it could be felt by the "hands." To return, however, to thoſe things which were publiſh'd at that time, which was in the year 1732, although I very well remember'd them, yet not unmindful of thoſe three obſervations, that I pointed out in the firſt place, of a ſacculus hanging down from the liver, nor yet of the admonition, in the latter end of the ſixth book *de morbis popularibus*, that even good phyſicians, "not to mention others," are often deceiv'd by "appear-"ances," I was not willing to imitate Baglivi, who, if he were living at preſent, and ſhould read what is written by our Valliſneri (*k*), and Scheffelius (*l*), would certainly repent of having written too haſtily, and in conſe-

(*b*) N. 43.
(*c*) Epiſt. de rad. chin.
(*d*) Pathol. l. 6. c. 5.
(*e*) Act. n. c. tom. 1. obſ. 78.
(*f*) Mem. de l'acad. r. des ſc. 1701.
(*g*) Differt. qua calculi in vaſic. fell. &c. theſ. 5.
(*h*) Comment. in Boerhaav. aph. §. 950. & 935.
(*i*) Commerc. litter. a. 1733. hebd. 11. n. 2.
(*k*) Opere t. 3. p. 6. lett. 37. annot. 1.
(*l*) Differt. de lithiaſi fell. §. 28.

quence

quence of attending to ſome obſervations, but not to all that it was in his power to attend to (*m*), "when you ſee obſtinate jaundices, or thoſe that "have been cur'd, return afreſh, you may take it for granted, that theſe "are produc'd by a calculus of the gall-bladder, and for this reaſon you may "pronounce them incurable."

14. But in order to treat of theſe calculi of the gall-bladder, according to my promiſe, inaſmuch as their ſituation certainly is on the outſide of the liver, let me firſt obſerve, that there is ſo great a number of obſervations, of theſe concretions being found in the human body, that the liſt of thoſe which relate to the calculi of the liver, admits no idea of compariſon therewith. And if you inquire after the reaſon of this difference, you will find more than one, when you attend to the cauſes which are advanc'd, for the generation of calculi in the cyſt being ſo frequent.

Our Veſlingius (*n*) has ſuppos'd the thickneſs of the cyſtic bile, and its very long ſtagnation in that cavity, by which the meatus cyſtici, and valvulæ, are much ſtreighten'd, and leſs paſſable. And theſe cauſes you will find ſo peculiar to the cyſt, that the greater part of them are not, by any means, transferable to the hepatic ducts, and it is ſuprizing that a very eminent phyſician, among the more modern, who has acknowledg'd theſe very cauſes of the difference we are ſpeaking of, has not equally obſerv'd that they are alſo common to the cow ſpecies; in which, as he there confeſſes, that hepatic calculi are more frequent, ſo he ought, at the ſame time, to have aſſign'd ſome cauſe of this difference betwixt the human ſpecies, and this ſpecies of animals.

But thoſe things, which Veſlingius had previouſly demonſtrated, were, in the mean while, illuſtrated, and enlarg'd, by others; either by remarking a greater thickneſs of the bile in ſome men, and a greater diſpoſition to concretion; or by acknowledging a longer retention than is natural, by reaſon of the ſpaſmodic criſpatures, and conſtrictions of the cyſtic duct; or by reaſon of the power of ſelf-contraction being deprav'd, and weaken'd, in the relax'd coats of the veſicle. And this weakneſs of the coats becomes ſo much the greater afterwards, in proportion as a greater quantity of bile is retain'd, juſt as it happens in the urinary bladder, when from the quantity of retain'd urine its power of contraction is weaken'd, and overcome: which is a ſimile that was not only us'd formerly by Galen (*o*), but has even been us'd by the younger du Verney (*p*) in the preſent age: and from hence you underſtand what is, in general, the principal cauſe of thoſe vaſt enlargements of the cyſt being brought on, which I ſpoke of juſt now.

To theſe cauſes others were, moreover, added by Abraham Vater (*q*), whoſe name ought not to have been ſuppreſs'd by thoſe who wrote the ſame things afterwards. For he, having remark'd how difficult it is for the bile to aſcend, on account of the declivity of the fund of the cyſt, and obſerv'd the neceſſarily ſlow paſſage thereof, on account of the obliquity of the duct, judg'd, from conſidering both theſe cauſes, that the cyſt being compreſs'd by the ſtomach, none but the thinneſt, and moſt fluid, part of the bile was ſqueez'd out, and that the thickeſt was always left behind, in healthy bodies,

(*m*) De experim. circa bilem.
(*n*) Synt. anat. c. 4.
(*o*) De loc. aff. l. 5. c. 7. haud ita procul a fine.
(*p*) Cit. ſupra ad n. 13.
(*q*) Obſ. rariſſ. calcul. 3. §. 1.

which

which would eaſily concrete, unleſs it was preſently diluted by a new afflux of hepatic bile, and reſtor'd to its former conſiſtence.

But when this freſh afflux is either leſs than it ought to be, or the bile is ſecreted in a more viſcid ſtate than uſual, it does not fully anſwer the purpoſes of dilution, and renovation; for which reaſon the inſpiſſated bile of the cyſt more eaſily degenerates into calculi. And Fernelius (*r*) had trac'd out theſe cauſes to Vaterius, and, in ſome meaſure, even to Veſlingius, when he aſſerted that theſe calculi "had their origin from yellow bile, which having been "long retain'd in its proper receptacle, and not timely evacuted, nor dilu-"ted, and renovated, by a new influx, grows hard in a ſurprizing man-"ner."

15. Since, therefore, in this great infirmity, and intemperance, of human life, ſo many cauſes, which muſt be readily granted, are at hand to favour the production of cyſtic calculi, there is not the leaſt reaſon to wonder that they have been ſo often found, both by the ancients, and by moderns. For after Gentilis (*s*), and Nicolus (*t*), had teſtified their having ſeen concretions of this kind, the latter in the gall-bladder, and the former in the meatus thereof, Benivenius (*u*), Veſalius (*x*), Curtius (*y*), Falloppius (*z*), Fernelius (*), Stephanus (*a*), Columbus (*b*), and Coiterus (*c*), to take no notice of authors of leſs note, produc'd their obſervations to the ſame effect: and from the time that human bodies began to be more frequently diſſected, even to this very day, no writer in anatomical, or medical, matters has had occaſion to ſpeak pretty fully of that veſicle, but he has made mention of calculi being ſeen by him there; ſo that it is with juſtice the celebrated profeſſor Fabricius (*d*) ſays, that calculi of the gall-bladder have, in general, been more frequently obſerv'd than thoſe of the urinary bladder; and it is ſhown by the illuſtrious Haller (*e*), that they are even to be met with more frequently in ſome countries.

Wherefore I would not have you be ſurpriz'd, if I ſay, that while I write this preſent letter, I have before my eyes, at leaſt two hundred obſervations of this kind, nineteen of which are my own; but I would rather have you wonder that I have not read, or do not remember, a great many more. Yet thoſe, of which I have ſpoken, are not ſo few in number, but that I may from them venture to anſwer your inquiry, as to what occurs more frequently, or more rarely, in cyſtic calculi, and that without ſeeming to anſwer too haſtily, or raſhly. You may make this inquiry firſt of all, in what kind of bodies they are moſt frequently found? For Carolus Stephanus (*f*) has aſſerted, that they have been ſeen by him, "chiefly, in women, who were "pretty far advanc'd in life:" and, in this age, Frederick Hoffmann (*g*) has ſaid, "that they are found very rarely in men, who are in the flouriſhing time

(*r*) C. cit. ad n. 13.
(*s*)
(*t*) Apud Donat. de med. hiſt. mirab. l. 4. c. 30.
(*u*)
(*x*) Cit. ſupra ad n. 13.
(*y*) Comment. in mundin. anat. ubi de hepate in fin.
(*z*) Obſ. anat.
(*) Cit. ad n. 14.
(*a*) De diſſect. part. corp. hum. l. 3. c. 42.
(*b*) De re anat. l. ult.
(*c*) Obſ. anat.
(*d*) Propempt. ad diſſert. Jo. Barth. Hoffmann.
(*e*) Opuſc. pathol. obſ. 33.
(*f*) C. 42. modo cit.
(*g*) Med. rat. t. 4. n. 2. ſ. 2. c. 3. §. 12.

" of life, but more frequently in old men, and ſtill more frequently in women " than in men." The firſt thing pronounc'd by Hoffmann, therefore, is much more true than the laſt. For I ſee in the obſervations ſpoken of, that the number of males and females is nearly equal. But although I find old people, promiſcuouſly, of both ſexes, to the number of ſixty-one, whoſe ages are particularly pointed out by the obſervators, I find no more than eight who are ſaid to be young: and among theſe there is no infant, and but one child; and the leaſt age, amongſt theſe eight, is that of twelve years, and the greateſt nine and twenty.

Without doubt, in a flouriſhing time of life the juices are thinner, more briſkly agitated, and leſs prone to concretion, than in the decline of life, or as Hoffmann particularly ſaw, than in the leſs laborious life of very old men, eſpecially, and women. For which reaſon Haller, whom I have already commended, accounts for " the frequent calculi of the gall-bladder, which he " found in criminals, who had been long confin'd to priſon," from the want of muſcular action (*b*). And to the ſame cauſe, you muſt refer what the illuſtrious Van Swieten (*i*) found to happen in bile, which was not agitated. For, " having left it to putrify in a pure glaſs veſſel, he found calculous " coagula in the bottom of the veſſel." Yet the middle age, although it is an active ſeaſon of life, has not juices to be compar'd with the flouriſhing prime of our age, for which reaſon it happens, that this time of life cannot equally reſiſt the injuries of intemperance, and of the paſſions, to both of which it is ſtill more liable than old age. If you add to this, that a great part of the women in the lower claſſes of the people, do not lead a very ſedentary life: and if you compare all theſe things with thoſe which are ſaid above (*k*), upon the cauſes that produce calculi of the gall-bladder; you will, of courſe, eaſily perceive that the obſervations are conſonant to reaſon.

16. But if you now inquire, whether Reverhorſt (*l*) has written truly or not, when he has admoniſh'd us, that we might remark, in regard to theſe calculi, " that the younger the body is from whence they are taken, the " more pale are they in their colour, that in a middle age they are of a yel- " low colour, but in a more advanc'd time of life of a darker yellow, or even " almoſt black," it will be much more eaſy to give you an anſwer to this queſtion. For it is not the queſtion, here, what is more frequent, but what is perpetual; ſo that I can readily affirm, even from inſpecting my own obſervations, that this is too haſtily pronounc'd. For I have found not only blackiſh, but very black calculi, in many of a middle age likewiſe; in a young man of five and twenty, and in an old woman of ſeventy-five (the former of which is the youngeſt, and the latter the oldeſt, from whoſe gall-bladder I have hitherto taken calculi) they were not very different in colour from each other, ſo that they were neither black in the old woman, nor very pale in the young man, eſpecially if you compare them with one of a cineritious colour, which I found in a woman of ſixty years of age within one.

But that you may not depend upon my obſervations alone, I have, certainly, not read of calculi being found in a younger woman, than that virgin

(*b*) Experim. anat. de ſang. mot. c. 6.
(*i*) Comment. in Boerhaav. aph. §. 950.
(*k*) N. 14.
(*l*) Differt. de motu bilis §. 57.

of

of nineteen, who is deſcrib'd by Bonetus, in the former book (*m*). Yet in her all the ſtones were "yellow, and reſembled bile in their colour." On the contrary, that woman, whoſe hiſtory is accurately deſcrib'd by Cajetanus Tacconus (*n*), was of an advanc'd age, that is of ſixty-three years, and affected with a black jaundice beſides. Nevertheleſs, all the calculi from her body, "not only inclin'd to a whitiſh colour, or dilute ſaffron hue;" but, notwithſtanding they were internally yellow, were furniſh'd with coats that were "white, and ſhining, and reſembled the internal ſilver ſurface of mo-"ther of pearl."

And, without doubt, the age is not to be ſo much conſider'd, as the matter of which they are, or have been, made, for they do not always bear the colour of the bile in which they are found; and this colour, according to the various diſpoſition of the blood, or of the organs, may ſometimes be, or have been, of a different nature, or the bile may have even hid, under the ſame colour, particles of a different kind, though at the ſame time of life, and equally proper to form calculous concretions. Thus Abraham Vater (*o*), thus the celebrated Trew (*p*), to paſs over other obſervations of my own, and thoſe of different authors, met with them in the manner I am ſpeaking of; for the former "found a calculus, in a very thick and black bile, which was of a co-"lour inclining to white," and the latter, in bile which was of a bright yellow, found a calculus that was, externally, "in great meaſure white, and "brown in other parts, but became very white, by means even of the "ſlighteſt friction," yet internally, if you excepted "a kind of rediſh ſpot, "it was pale," and the former of theſe appearances was in a man, and the latter in an old man, not in any young man.

17. Nor do they more favour the opinion of Reverhorſt, who have, in general, affirm'd that theſe calculi "are found to be black, blackiſh, or "brown, for the moſt part:" although, as I know that the calculi found by our anceſtors, and by others, have been frequently of a colour of this kind, ſo myſelf alſo confeſs, that I have more frequently found them in the former years of my obſervations, than in the latter; yet a great number of mine, and ſtill a greater number of the obſervations of others, muſt of courſe ſlip my memory, before I can eaſily believe that theſe concretions are "for the moſt "part" found to be of that colour. Kentmann, as you read in Schenck (*q*), writing of theſe calculi in general, ſays that they are "all of a colour ap-"proaching to yellow, which is, by degrees, chang'd into a deep yellow, or "ſaffron colour, as they increaſe in their ſize," and indeed he ſoon after produces examples "of a kind of yellowiſh calculi," and "of a yellow one" being found here by our Falloppius.

But a much greater number of inſtances are added, in the writings of the ſame Schenck, of concretions of a different colour. And this muſt be granted: but then other obſervations are to be ſet in oppoſition thereto, as of Joannes Francus (*r*), who ſaw calculi "of a ſaffron colour," as of Cæſalpi-

(*m*) Sepulch. l. 2. ſ. 4. obſ. 35.
(*n*) De raris quibuſd. hepat. affect. obſerv. obſ. 1.
(*o*) Diſſert. qua calculi, &c. theſ. 4 & 5.
(*p*) Commerc. litter. a. 1743. hebd. 32. n. 3. & hebd. 36. n. 4.
(*q*) Obſ. med. l. 3. ubi de Veſic. fell. lapid.
(*r*) Ibid.

nus (*s*), who ſaw them of the ſame colour, as of Boſchus (*t*), who found them "of a citron colour," as of Panarolus (*u*), and Dobrzenſky (*x*), who found them "of a yellow colour." Nor indeed are Hoechſtetter (*y*), Schelhammer (*z*), Steinius (*a*), and Bierlingius (*b*), to be paſs'd over, by whom "yellow, yellowiſh, and ſaffron colour'd calculi" have been ſeen; nor yet Horſtius (*c*), nor Helwigius, (*d*), by both of whom a great number was found; thoſe being all of a "yellowiſh colour" which were ſeen by the latter, and, in part, by the former.

To theſe you may add Platner (*e*), and Bezoldus (*f*), one of whom found them "of a golden yellow colour," and the other "of a yellow colour inclining to white," and not only theſe but even many more, among whom are the members of the laudable ſociety at Edinburgh (*g*), who found "yellowiſh calculi," in a boy of twelve years of age, and the celebrated Trew (*h*), who ſaw them "ſlightly yellow externally," even in the body of a perſon who had liv'd more than ſeventy-four years, and ſtill more the celebrated Haller (*i*), as he ſaw, even in a woman who was ſaid to be more than a hundred years of age, perhaps all the calculi, but, at leaſt, one of them in particular, of a yellow colour." The ſame author having found ſixteen in another old woman (*k*), ſays that thirteen of them were "yellow:" and that in a man who had been hang'd (*l*), they were of a yellow colour "inclining to white." But Weitbrecht (*m*) even found them to be "yellow," in an old man.

Other obſervations, beſides theſe, I have either juſt now taken notice of, or ſhall take notice of hereafter: and ſtill others, and thoſe not few in number, I ſhall purpoſely paſs over; for it is not my intention to point out them all, but only as many as are ſufficient to ſhow, that theſe gall-ſtones are not found, "for the moſt part," of a black or brown colour. And even Vater (*n*), Hoffmann (*o*), and Bezoldus (*p*), when they treated of the colours of theſe calculi, in general, put among the number of thoſe, which are "commonly," or "more frequently," obſerv'd, "the concretions of a yellowiſh hue," as is the expreſſion of the two firſt; and Bezoldus has particularly ſaid "that they "moſt frequently incline to yellowneſs."

18. And although a great number of thoſe who have mention'd cyſtic calculi, have been ſilent in regard to their colour, yet there are ſo many who have not been ſilent upon this head, that it ſufficiently appears they generally are found to be either of a yellow, or a black colour. I ſay generally, becauſe blue concretions have alſo been ſeen, as by Coiterus (*q*), Ne-

(*s*) Quæſt. med. l. 2. in ipſo fine.
(*t*) De facult. anat. lect. 2.
(*u*) Jatrol. pent. 5. obſ. 22.
(*x*) Eph. n. c. a. 1. obſ. 129.
(*y*) Obſ. med. dec. 10. caſ. 9.
(*z*)
(*a*) Apud Scheffel. diſſ. de lit. fell. §. 10.
(*b*) Sepulchr. l. 4. ſ. 1. in additam. obſ. 12.
(*c*) Ibid. l. 2. ſ. 7. obſ. 125.
(*d*) Ibid. l. 3. ſ. 7. in addit. obſ. 1.
(*e*) Progr. edit. 17. mart. a. 1746.
(*f*) Diſſert. de cholelitho caſ. 1.
(*g*) Cit. ſupra ad n. 13.
(*h*) Commerc. litter. a. 1734. hebd. 6. n. 5. in fin.
(*i*) Opuſc. pathol. obſ. 33. hiſt. 4.
(*k*) Ibid. hiſt. 11.
(*l*) Ibid. hiſt. 13.
(*m*) Commerc. litter. a. modo cit. hebd. 9. n. 2.
(*n*) Diſſert. ſupra ad n. 13. cit. theſ. 3.
(*o*) C. 3. ſupra ad n. 15. cit. §. 2.
(*p*) Diſſert. modo cit. §. 5.
(*q*) Obſ. anat.

retius (*r*), and Goritzius (*s*), who alſo obſerv'd "ſmall red points," perhaps from the particles of the adhering cyſt being lacerated here and there: for this calculus was ſo ſtreightly confin'd in the cyſt, that there was a neceſſity of extracting it by force: and they have been ſeen of a red colour, as by Camenicenus (*t*), and by Bartholin (*u*): of a cineritious, as by our Fabricius (*x*) and Boſcus (*y*): of a whitiſh colour, as by Reverhorſt (*z*), by Vater (*a*), by Haller (*b*) by Van Swieten (*c*); and even of a ſilver colour, as by Platerus (*d*): of a golden colour, as by the ſame (*e*), and in part by others; for I have not undertaken to mention every one in this place: and finally, of a green or greeniſh colour, which is much more frequent than thoſe laſt ſpoken of, or others which for the ſake of brevity are omitted, ſo that I have very often ſeen the ſame, the cineritious ſometimes, the golden-colour in part now and then, but the others I have never yet ſeen.

Nevertheleſs I have alſo ſeen calculi of a variegated colour, in the manner I have deſcrib'd them in the epiſtle ſent to Schrockius (*f*); and Gerbezius (*g*) ſaw them of a brown colour mix'd with white; Baeumlinus (*h*) of a white and yellow, inclining to green; and many others, that were contain'd even in the ſame cyſt, diſtinguiſh'd with ſpots of bright red, or ſcarlet hue, and with others of pale or a griſly colour. Out of which colours, and others that are juſt now mention'd, you cannot properly call any one black. And to theſe you may, moreover, add the calculi which are without, or almoſt without, any colour: of which kind was that large one found by Sculletus (*i*), which not only fill'd the cyſt, but even diſtended it, and was "pel-"lucid like chryſtal;" or thoſe that the royal ſurgeon Tamponettius (*k*), and Manchius (*l*), formerly found, the latter "tranſparent, though friable, "and of the bigneſs of a filbert," and the former "ſhining and ſoft like a "concreted gum, and of the bigneſs of a pigeon's egg," (ſo that it brings to my mind one deſcrib'd by the celebrated Heiſter (*m*), which, beneath a rugous ſurface, "had a ſubſtance, and, in general, a colour, not far unlike "a gum, which is ſomewhat more ſolid than gum arabic) or that which is "repreſented, in a plate, by Bezoldus (*n*), of the form of a chryſtal, and "perfectly pellucid," found by Henricus Albertus Nicolai, and pointed out in the fifth obſervation (*o*).

That whitiſh calculus, alſo, which I have more than once mention'd from Vaterus (*p*), was pellucid and tranſparent:" to which, if you attend leſs to the colour, you may add from the Sepulchretum (*), thoſe thirty found by

(*r*) Apud Schenck. obſ. cit. ſupra ad n. 17.
(*s*) Eph. n. c. cent. 8. obſ. 20.
(*t*) Epiſt. ad Matthiol.
(*u*) Cent. 3. epiſt. med. 86.
(*x*) Apud Schenck. obſ. cit.
(*y*) De facultat. anat. lect. 2.
(*z*) §. cit. ſupra ad n. 16.
(*a*) Diſſ. ibid. cit. theſ. 4.
(*b*) Obſ. cit. ad n. 17. hiſt. 1 & 6.
(*c*) Comment. cit. ſupra ad n. 15. §. 935. ad 2.
(*d*) Obſ. l. 3. ubi de tereſt. excret.
(*e*) Ibid.
(*f*) In act. n. c. tom. 2. obſ. 147.
(*g*) Eph. n. c. cent. 1. obſ. 57.
(*h*) Commerc. litter. a. 1743. hebd. 28. n. 2.
(*i*) Armata chir. obſ. 61.
(*k*) Zodiac. med. gall. a. 1. April. obſ. 7.
(*l*) Ibid. mai obſ. 8.
(*m*) Act. n. c. tom. 1. obſ. 181.
(*n*) Differt. de cholelitho §. 5. fig. 4.
(*o*) Dec. obſ. illuſt.
(*p*) Theſ. 4. hic cit. & 5.
(*) L. 3. ſ. 17. in addit. append. ad obſ. 2. §. 1.

Scharpius,

Scharpius, which were " pellucid like a carbuncle ;" and perhaps, likewiſe, eighty more, which were found by our Sanctorius (*q*), " ſimilar to the ſtones " call'd chryſolites," I ſuppoſe like the chryſolites which are deſcrib'd by Pliny (*r*), " tranſparent, and of a golden colour."

But if you would conſider nothing beſides a ſhining property, in cyſtic calculi, others ought to be taken notice of here, as from Griſelius (*s*) that which was a little leſs than a hen's egg, and when broken, " ſhone as if " it had been full of nitre ;" or from Jo. Theodore Schenck (*t*), and Jo. Rhodius (*u*), thoſe which were many degrees leſs than the laſt-mention'd, but being broken, in like manner, ſhone like chryſtals " of tartar " or talc, as that alſo did like " talc," which I firſt took notice of from Trew (*x*): and even to myſelf (*y*), the nucleus of ſome has appear'd to be diſtinguiſh'd here and there, with a kind of ſhining points. But that thoſe " blue con- " cretions" of Neretius (*z*), or Platerus (*a*), were ſhining, the former, at " one time, of a bright ſilver colour, and at another time, of a bright golden " hue," that is externally only ; for I do not read that they were broken ; has but little reference, I think, to thoſe of which I juſt now ſpoke. To which I ſuppoſe, theſe that are deſcrib'd by Baglivi (*b*), may be with more juſtice ſuppos'd to relate; for he ſays that they " almoſt emitted ſparkles, as " if they had been a congeries of black ſalt chryſtalliz'd."

However, to that claſs certainly belong, chiefly, thoſe two which were not long ago deſcrib'd by the celebrated Morand (*c*), one from the obſervation of the famous Geoffroy, and the other from his own, the former internally in part, but the latter externally, and internally, for the moſt part, ſhining, and almoſt quite pellucid : and to that claſs belong other calculi deſcrib'd by other authors, and particularly by the very excellent Haller (*d*), which I ſhall more properly take notice of below (*e*), when I ſpeak of the ſtructure of gall-ſtones, not without that " chryſtalline" calculus, if I am able in the mean time to find it any where in Hildanus.

19. For now it is neceſſary, previouſly, to touch upon a few things in regard to the various magnitude, number, figure, and ſituation, of theſe ſtones. There was a time then, when one of theſe concretions was not only found to fill, but alſo to diſtend, the cyſt, as I ſaid juſt now, and even to diſtend it " very greatly," as you will ſee in the Sepulchretum (*f*). A calculus has alſo been found equal to the ſize of this cyſt, of which you will have more than one inſtance, in the ſame place (*g*). At one time it has been " half as big as an hen's egg," as our Falloppius found it (*h*); and at another, as big as a pigeon's egg (for I paſs over the intermediate degrees of magnitude in the ſecond and third, as I do in the firſt and ſecond) of which ſize they have been ſeen by many after Coiterus (*i*) ; and amongſt theſe by our

(*q*) Comment. in I. Fen. I. can. avic. qu. 76.
(*r*) Nat. hiſt. l. 37. c. 9.
(*s*) Vid. in modo cit. ſect. 17. obſ. 13. §. 11.
(*t*) Vid. ad Sachini Gammarolog. epiſt. addit. 7. ad c. 14.
(*u*) Cent. 3. obſ. med. 45.
(*x*) Supra n. 16.
(*y*) Obſ. cit. 147.
(*z*)
(*a*) Locis Paulo ante cit.
(*b*) De experim. circa bilem.
(*c*) Mem. de l'acad. R. des ſc. a. 1741.
(*d*) Opuſc. pathol. obſ. 33.
(*e*) N. 23, & 24.
(*f*) L. 3. ſ. 10. in addit. obſ. 1.
(*g*) Ibid. ſ. 13. obſ. 12. §. 7. & ſ. 18. obſ. 8. §. 14.
(*h*) Apud Schenck. obſ. 1. ſit ſupra ad n. 17.
(*i*) Obſ. anat.

Valliſneri

Vallisneri (*k*), in the last of the Gonzaga family that was duke of Mantua, who suppos'd it to be an hereditary disease, for this reason, that Bartoletus (*l*) had likewise found a calculus at the orifice of the cyst, in Ferdinand Gonzaga, who was also a Mantuan nobleman: which would not have been an improbable argument, if this last duke had descended from Ferdinand, who, however, left no sons. But they are generally found to be of a much less size than these: and indeed are, sometimes, so very small, that Vesalius (*m*) compar'd those which he found in Marcellus, to "millet seeds."

And as the gall-bladder, in this body, was certainly equal to the size of two fists, as I have even said above (*n*), and fill'd with stones of that kind, you may easily imagine, from hence, how great a number of them is sometimes met with. They who have actually number'd them after Falloppius (*o*), who, with that pretty large one, found "a hundred and twenty-three," have reckon'd not only "three hundred," as Bartoletus (*p*), or "three hundred and "six," as the brother of Platerus (*q*), more than which I have even found, but above "seven hundred," as Mentzelius (*r*), and even "above a thou-"sand," as Graseccius (*s*) did formerly; so that it is surprizing, that some, speaking in general of the number of cystic calculi, should have stop'd at the number of Joach. Camerarius (*t*), that is at a hundred and forty-three. And what will you say to an instance, which is already publish'd by the celebrated Storchius (*u*), of an ancient nobleman, in whom "more than two "thousand of these calculi were reckon'd up;" and another, in like manner, by Faschius (*x*), who, in the enlarg'd cyst of a certain man, "found "three thousand six hundred and forty-six granules of concreted bile, which "he even used to show as a curiosity." And although sometimes there are no more than one calculus, as was demonstrated just now, yet it is much more common to find a greater number.

And as to what relates to the figure, moreover, some of them, indeed, are nearly spherical, some almost oval, or of some other figure, that is not at all angular, as even the likenesses, which are made use of by observators to describe them, demonstrate; as, for instance, that of some species of nut, an olive, an egg, or other things of a similar kind: but they are for the most part angular. And these spherical calculi receive their form from the figure of the vesicle itself, whether this be natural or contracted, or enlarg'd, and made more globular, by disease, especially when they fill it, and that whether there are no more than one, or more than one, provided they are as yet so soft (for even those that are pretty large, sometimes (*y*) preserve the softness of new cheese) as to allow of their being all squeez'd together into a form of that kind; as you see in the Sepulchretum (*z*), that instead of bile, "there was one orbicular stone, consisting of nine other triangular stones,

(*k*) Epist. supra cit. ad. n. 13. adnot. 2.
(*l*) Vid. Rhod. cent. 3. obs. med. 2.
(*m*) Epist. de rad. chin.
(*n*) N. 13.
(*o*) Obs. 1. modo cit. apud Schenck.
(*p*) Obs. 2. Rhod. modo cit.
(*q*) L. 3. cit. supra ad. n. 17.
(*r*) Eph. n. c. dec. 1. a. 9. obs. 181.
(*s*) Apud Schenck. in fine obs. 1. modo cit.
(*t*) In eadem 1. obs.
(*u*) Commerc. litter. a. 1735 hebd. 59. n. 4.
(*x*) Vid. in obs. 68. tom. 5. act. n. c.
(*y*) Eorund. t. 3. append. n. viii. append. 1. ad obs. 10.
(*z*) L. 3. s. 17. obs. 14. §. 5.

"lying

" lying mutually upon each other, and eaſily ſeparable by the hand." A ſimilar obſervation to which is extant *(a)*, (except that it is much more ſurpriſing, on account of the exactly equal partition of weight, and, for that reaſon, almoſt incredible) " of a calculous globe weighing two ounces and " a half," which, being taken out of a cyſt that contain'd nothing elſe, " ſe- " parated into ſixty leſſer calculi, obſcurely yellow, and friable, each of " them having five ſurfaces, and being equal to the weight of one ſcruple " exactly." But other examples of cyſtic calculi are alſo extant, which, reſembling a pigeon's egg *(b)*, " ſeem'd to be made up of leſſer calculi," or were even " compacted," *(c)* or " compounded, of mere granules *(d)*."

Shall we then ſay that granules of this kind are the firſt beginnings of cyſtic calculi? They are certainly often found in the veſicle, for to thoſe which I have here produc'd, you may add many and many other obſervations, of the ſame bodies, as in a virgin ſpoken of by the younger du Verney *(e)*, and in a man mention'd by the celebrated Jo. Sebaſt. Albrechtus *(f)*; as, in the former, the bile was concreted into ſo many little grumous corpuſcles, and in the latter, was " like granulated ſugar, or had the form of " blanch'd millet ſeeds:" and not to be too prolix, as in ſo many other bodies *(g)*, in which there being calculi " of a granulated ſurface," or " full of " tubercles in the form of a mulberry," the granules ſeem to have adher'd to the ſurface, and been form'd into one ſubſtance therewith. It is not to be doubted therefore, but theſe are the beginnings of thoſe calculi, which conſiſt of granules of concreted bile. But in the cyſt, together with the calculi, a great quantity of " ſandy and mucous matter *(h)*, and a large quantity " of ſand," has been, more than once, found, ſo that the ſame perſon, to whom this occur'd, judg'd " that it was to be conſider'd, without any " doubt, as the matrix of the calculi:" and this perſon was Bergenius *(i)*. Therefore, if the bile be accreted to a grain of ſand, as to a nucleus, you ſee that this is to be look'd upon as another beginning of theſe calculi. To theſe add others, which have been obſerv'd by me, at other times, and which I ſhall take notice of with more propriety below *(k)*; and you will, at once, conceive that granules of concreted bile, cannot poſſibly be the beginning of every calculus.

But as I have ſaid that theſe calculi are, for the moſt part, angular, perhaps you will aſk, from whence I derive the origin of theſe angles? If many calculi which are as yet ſoft, and round, are compacted into one, either oval, or ſpherical, body, in the manner I have deſcrib'd, in two inſtances juſt now produc'd, ſo that from the compreſſion of one againſt the other, they acquire theſe new forms, and after that, from any cauſe whatever, are ſeparated, it is very eaſy to conceive of the origin of theſe angles. Yet be-

(*a*) Act. modo cit. t. 5. obſ. 129.
(*b*) Commerc. litt. a. 1745. hebd. 24. n. 1.
(*c*) Eph. n. c. cent. 8. obſ. 20.
(*d*) Haller. opuſc. pathol. obſ. 33. hiſt. 13.
(*e*) Cit. ſupra ad n. 13.
(*f*) Act. n c. tom. 4. obſ. 49.
(*g*) Eorund. act. t. 1. obſ. 20. cum tab. 3. fig. 3 & 4. & eph. cent. 5 tab. 1. fig. 3. 4. 5 & 6. & Haller. obſ. cit. hiſt. 5.
(*h*) Commerc. litt. a. 1733. hebd, 45. poſt. n. 6.
(*i*) Et a. 1739. hebd. 39. n. 1.
(*k*) N. 22.

cauſe

cauſe examples of this kind very rarely occur, we generally account for theſe angles, from the friction of the round calculi, againſt each other.

For who can deny the exiſtence of this friction, that obſerves the ſmoothneſs of their ſurfaces, or who looks upon thoſe two cyſtic calculi, which are delineated in the works of Hildanus *(l)*? For one of them "is ſo greatly "hollow'd out, that it can admit almoſt a third part of the other," which, ſays he, muſt have been done, "without doubt, by the continual friction of one againſt the other; and ſimilar appearances to this, he might have ſometimes ſeen, in calculi of the urinary bladder likewiſe, from a ſimilar cauſe.

Conſider alſo that large one, which is deſcrib'd and delineated by the celebrated Bechmann *(m)*, and which, conſiſting of three parts, had extended the cyſt. When you ſee how much the middle part, in particular, enter'd into the lower part, and attend to the exact poliſh of the ſurfaces, which were contiguous to each other, you will, beyond a doubt, affirm that this was owing to friction.

20. But with how many angles theſe calculi have been furniſh'd, of what kind theſe angles were, or in what manner they were plac'd, or what figure they, for the moſt part, have put on, it is not eaſy to determine from the obſervations of others, not only on account of the great variety, that there, frequently, is even in thoſe which are contain'd in one and the ſame veſicle, but ſtill more, by reaſon of the proper ſignification, and ſtrict ſenſe, of words being frequently neglected, in pointing out the figures, by thoſe who ought by no means to have been thus careleſs, or by the deſcription of thoſe figures being neglected, which were proper to give an idea of their form. Indeed when I read Veſalius deſcribing *(n)* eighteen calculi, which he had found in the cyſt of a man, "as form'd in the manner of a triangle, with the ſides and "ſurfaces every where equal;" I ſeem to myſelf to have an idea of a tetraedrum properly ſo call'd.

But on the other hand, when many others call them "triquetri," or "trian-"gles," or "triangular," I neither know whether they ſaw them in the form of a priſm, or a pyramid, nor, whichever form they ſaw them in, whether comprehended under equal or unequal planes. On the contrary, however, when Greiſelius *(o)* ſays that he had found four pretty large "cubic" ſtones, together with an almoſt innumerable quantity of other ſmaller ſtones, all which, as far as he could diſtinguiſh, "reſembled a cube;" I have no doubt of his idea: but I am much in doubt, when many others ſay that they were "ſquare," or "quadrangles," or "quadrangular;" for you ſee how many different ſpecies of parallelopipeds may be ſignified by theſe words.

However when I examine, attentively, all the calculi which I have in my poſſeſſion, and I have a great number, I perceive, in the firſt place, that it is very difficult to find any perfect regular figure at all, in angular calculi, and I cannot help believing that Veſalius himſelf, and Greiſelius, rather meant to be underſtood a figure, which approach'd very near to that of a tetraedra, and to that of a cube: and in the ſecond place, I think that

(*l*) Cent. 4. obſ. 41.
(*m*) Commerc. litter. a. 1742. hebd. 32. n. 1. cum tab. 2. fig. 10.
(*n*) Epiſt. de rad. chin.
(*o*) Eph. n. c. dec. 1. a. 3. obſ. 45.

thoſe who have call'd them triangular, or quadrangular, meant to point out a figure which comes near in ſome meaſure to that of a tetraedra, or a cube: and, finally, I ſuppoſe that as both of theſe forms, in conſequence of not being perfect, if you ſo conceive of them, for the moſt part offer ſome ſurfaces to the eye, which, at firſt ſight, ſeem more like the one, or more like the other, many have refer'd them to one claſs, and many alſo to the other; but if the calculi are examin'd accurately, in every part, I imagine that they will generally be found of that figure, which was formerly pointed out by me, in the firſt of the *Epiſtolæ Anatomicæ* (*p*). And that they have very often more angles than either of theſe figures requires, that which I there deſcrib'd ſufficiently demonſtrates: and Kentmannus (*q*) has formerly taught, that they have many more, and the more in proportion, as there are more calculi contain'd in a cyſt; however, though I confeſs that the firſt ſuppoſition does ſometimes take place, yet whether the ſecond does I am greatly in doubt; and even if I attend to ſome obſervations of Greiſelius, and of my own, I know that it is not always true.

But let us ſuppoſe what number of angles we pleaſe; wherever there are ſome very acute, or the ſurface of the calculi is very rough, they may, if a conſiderable weight is at the ſame time added, not only irritate the cyſt, but ſometimes alſo burſt through it. A very extraordinary inſtance of which rupture you have in the Sepulchretum (*r*).

But irritation may excite inflammations, ulcers, and excreſcences, which have been ſeen even by me (*s*), and, if with Wepfer (*t*), we compare the urinary and gall-bladder to each other, may at leaſt bring on a preternatural thickneſs of the coats. For the urinary bladder "often becomes four times as "thick as it naturally is, by the continual friction of the calculi upon it," as he ſays, and as we ſhall ſee, in its proper place (*u*). And he alſo found the coats of the biliary cyſt "preternaturally thicken'd," and, as he thinks, from the ſame cauſe, as others alſo have ſometimes, among whom are not only ſome of my diſciples (*x*), but likewiſe the very learned Trew (*y*), who did not find it without a purulent matter, but, in particular, the celebrated Bezoldus (*z*), who deſcribes theſe coats as being "harden'd, thicken'd, and, in a manner, cartilagineous," although he enquires after a different cauſe from the calculi, which the cyſt, in his example, and thoſe juſt now pointed out, contain'd; and certainly a different cauſe may, at other times, with ſome juſtice be aſſign'd (*a*). But the ſurface of theſe concretions is frequently ſmooth, as Veſalius ſaw in that lawyer, eſpecially if they are in the number of thoſe that are yellowiſh, which we perceive, even when dried, to have a kind of greaſy ſmoothneſs, as if they had been ſmear'd over with ſoap, an unctuous ſmoothneſs of which kind, I have, ſometimes, obſerv'd to be ſtill more conſiderable, in thoſe that are of a greeniſh colour (*b*).

(*p*) N. 44. in fin.
(*q*) Apud Schenck. obſ. 1. cit. ſupra ad. n. 37.
(*r*) L. 3. ſ. 14. obſ. 5. §. 4.
(*s*) Epiſt. anat. 1. n. 43.
(*t*) In auctar. ad obſ. de apopl. hiſt. 13. in ſchol. n. 5.
(*u*) Epiſt. 42.
(*x*) Epiſt. ad Schrock. de quæ ſupra n. 18.
(*y*) Act. n. c. tom. obſ. 140.
(*z*) Diſp. de cholelitho §. 6.
(*a*) Vid. Sepulchret. l. 3. ſ. 21. obſ. 4. §. 11.
(*b*) Epiſt. modo cit. ad. Schrock.

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21. But as to what I have ſaid of irritation, there is no doubt but this muſt take place then alſo, when the calculi are form'd within the coats of the cyſt, provided they are rough, or large. And thus I ſuppoſe that the obſervation of Gendrotſius (*c*), that is of a dyſentery, from a continual diſcharge of bile into the inteſtinum duodenum, may be explain'd, whereas there were two pretty large, and unequal, calculi in the cyſt, involv'd in a peculiar membrane. And you will ſuppoſe them to have been generated in the glands of the cyſt, and that being increas'd therein, they had extended their ſituation between the coats, in which ſituation thoſe glands, alſo, naturally lie. For you will remember that ſmall biliary calculi were formerly found, and demonſtrated, by me (*d*), in thoſe glands which open'd by very evident orifices, and were, for that reaſon, leſs to be call'd into queſtion. And that theſe had been very ingeniouſly found out, and acknowledg'd, by the celebrated Galeati alſo, in an obſervation very ſimilar to mine, except that thoſe orifices did not appear, I learn'd afterwards with pleaſure, when the firſt volume of the commentaries of the Academy of Sciences at Bologna was publiſh'd (*e*). And I ſhall tell you below (*f*), that another very ſmall calculus has been obſerv'd by me, betwixt the coats of the cyſt.

For it is your buſineſs, now, to conſider, whether in that obſervation of Greiſelius, which I took notice of above (*g*), "the other coat that grew to "the fund of the cyſt, and contain'd a ſtone in the form of a cube, that "was bigger than any of the others," is to be accounted for in the ſame manner. However, I have very little doubt, but the obſervation of the celebrated Ellerus may be thus explain'd, which, if I remember rightly I read ſome years ago, in the fourth volume of the Berlin miſcellanies.

For I ſhould readily ſuppoſe that the ſmall, round, and yellowiſh calculus, which he found concreted in the fundus of the cyſt, and ſurrounded with a membrane produc'd from the pellicles of that bladder, had been form'd in ſome one of its glands. And, indeed, I am alſo inclin'd to think it probable, that a calculus, which, from all its appearances, was biliary, had been form'd in no other place, as the thicker part of it lay hid in a certain ſacculus, betwixt the coats of the cyſt, and the other part ſtop'd up the neck of the cyſt (*b*): ſo far am I from believing it to be prov'd by this obſervation, that the gall-bladder is not furniſh'd with any glands. And, indeed, the cervix of this cyſt cannot be ſtop'd up by a hard and thick body of that kind, but other parts muſt certainly be preſs'd upon, which are neceſſary to the actions of the cyſt, or the cyſt itſelf muſt be contracted, and criſp'd up, by the irritation; ſo that we need not be ſurpriz'd after this, if the ſecretion of its glands be either obſtructed, or injur'd.

You may imagine me to have ſaid nearly the ſame things, in regard to the experiments of thoſe gentlemen alſo, who have tied up the meatus of the cyſt, in the living animal. Theſe glands, therefore, are not taken notice of by anatomiſts, but are known from certain obſervations, many of which

(*c*) Zodiac. med. gall. a. 1. maj. obſ. 6.
(*d*) Epiſt. anat. 1. n. 56.
(*e*) Vid. in opuſc.
(*f*) N. 29. in fin.
(*g*) N. 19. 20.
(*b*) Hiſt. de l'acad. r. des ſc. a. 1755. obſ. anat. 1.

kind are mention'd by me, in the firſt of the *Epiſtolæ Anatomicæ (i)*. In which, however, I have not, taken notice of "ſome glands that lie very "near to the cervix" only; unleſs, perhaps, the learned man ſuppos'd, at the time of writing, by a failure of memory, as frequently happens, that what I have there ſaid of the urinary bladder, not under number ninety-ſix, but under number ſixty-three, was ſaid in relation to the gall-bladder.

22. Now ſince I have ſaid more than I intended of the magnitude of cyſtic calculi, their number, figure, and ſituation, although many things, among others, that I have ſaid may be uſeful in order to diſtinguiſh theſe concretions when they are diſcharg'd by ſtool; let us, at preſent, go on to conſider the remaining marks, which are ſuppos'd to be more conducive to this purpoſe, I mean their ſtructure, lightneſs, and propenſity to take flame.

As to what relates to the ſtructure, from the time in which Kentmannus (*k*) aſſerted that theſe calculi, if you broke them, appear'd, internally, to be "full of narrow circles ſurrounding each other mutually, ſo that any one "may obſerve, or, at leaſt, any one who takes the ſlighteſt notice, in what "manner the viſcid, and ſluggiſh bile, had, by degrees, concreted, and "become adheſive, from the center quite to the ſurface," ſcarcely any one has riſen up, who, ſpeaking of their ſtructure, and mode of accretion, did not agree with Kentmannus. Yet were there ſome things, which frequently, and in various calculi, ought, in part, to be corrected, by the help of repeated obſervations, and in part have others added to them.

For as to concentric circles appearing in ſections, that may be true in round calculi, whether they are ſpherical, cylindrical, or oval, ſo that the ſection, in each of theſe figures, be made according to the perpendicular of the axis, as in the parts of the calculus, alſo, which are hemiſpherical, conic, or cylindrical, in their form, as you ſee, for inſtance, in the larger of thoſe two repreſented by Hildanus (*l*). But if you divide angular calculi into ſections, the external ſtrata, of which they are compacted, muſt of courſe be far different from the circular form, and the internal ſtrata, likewiſe, as far as I have ſeen, will be nearly of the ſame kind: and this you may ſee in the figure which is given you by the celebrated Trew (*m*), whom I have often recommended.

For theſe reaſons I imagine they have ſpoken with more propriety, who, omitting the figure, have only mark'd out ſtrata lying upon ſtrata, as Boſcus (*n*), who has ſaid that, out of nine calculi, "layers had been concreted to "each other, in every one of them, as they are in an onion;" as Hildanus (*o*), who has ſaid that his "were concreted in laminæ;" and, not to be too prolix, as Malpighi (*p*), who has ſaid "that they are made up of a number "of involucra, mutually enwrapping each other;" I ſay, they have ſpoken with more propriety, than thoſe who, when ſpeaking of angular calculi, have mention'd circles to us, which you will find from the Sepulchretum (*q*), was

(*i*) N. eod. 56.
(*k*) Apud. Schenck. obſ. 1. ſæpius cit.
(*l*) Obſ. 44. cit. ſupra ad n. 19.
(*m*) Commerc. litter. a. 1754. tab. 1. fig. 5.
(*n*) De facult. anat. lect. 2.
(*o*) Obſ. modo cit.
(*p*) Op. poſth.
(*q*) L. 2. ſ. 1. obſ. 74.

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done by Otto Heurnius, where deſcribing a calculus "of a triangular figure, "extended into a pyramidal top, he ſays that cortical circles appeared there-"in, lying upon each other."

Nor is it ſufficient to correct theſe things in Kentmannus. For among the black calculi, both ſpherical, and angular, which I have by me, the greater part of them, now, ſhow no ſtrata at all; only ſome few of the angular, that are the moſt firm, have an external ſtratum, but ſomewhat obſcure in its appearance: the remaining ſubſtance is of ſuch a kind, that we muſt pardon the ancient authors, whoever lit upon them, and particularly Picolhominus (*r*), for aſſerting, that "the bile being burnt in the cyſt, like a coal, was "converted into blackiſh calculi," and he even might have ſaid extremely black, with juſtice, if he had ſeen theſe of mine. And I heartily wiſh the ſame indulgence could be given to men, in other reſpects very learned, who, in the great light of this preſent age, forgetting that, after ſo many diſeaſes, join'd with very great heat, no ſtones are, generally, found in the gall-bladder, have imagin'd that ſome of theſe, which happen'd to be found without any bile, were to be aſcrib'd to a violent fever that had preceded, which, having conſum'd all the aqueous part of the bile, had converted the remainder into ſtones.

But it is not ſufficient to except theſe black calculi, in order to reconcile with truth, the other things that Kentmannus has ſaid, I mean that the others are, at leaſt, full either of circles, or ſtrata of a different kind, "from the "center quite to the circumference," or as others, in general, ſay, of all the calculi hitherto known, that they are made up of concentric ſtrata, which deſcend even to the ſmalleſt nucleus. For I would have you ſee what obſervations have been made by me in the Adverſaria (*s*), in the firſt Epiſtola Anatomica (*t*), and in the letter ſent to Schrockius (*u*), on the nature of the nucleus, its ſoftneſs, and its magnitude in particular, in ſo many and ſo various calculi, as I am not willing to repeat them here. You will, at leaſt, perceive that I have found no ſmall quantity of meditullium, in proportion to their bulk, and ſo much the greater, in proportion as they were more increas'd, and that full of a ſoft, and moiſt bile, and conſequently, that no ſmall part of each of them, internally, is ſo far from conſiſting of theſe ſtrata, that it is neceſſary to enquire, by what means the bile can penetrate inwards, through theſe ſtrata which are already firm.

You will alſo perceive other things, that are purpoſely paſs'd over here, as, for inſtance, that the cuboidal calculi, which I have cut into, do not conſiſt of ſmaller calculi of the ſame figure, but, like the others of which I have ſpoken, of bile inveſted round about with ſtrata: that theſe are of different colours from each other, and ſometimes alternately ſo: and, finally, that they are, not uncommonly, ſeen to conſiſt of a great number of ſmall lines, going towards the centre.

23. This direction of the lines puts me in mind of a certain ſtructure of theſe calculi, differing from that which Kentmannus has advanc'd. Nor has this great number of ſmall lines only, which I juſt now mention'd, as being ob-

(*r*) L. 2. anat. prælect. 20.
(*s*) III. animad. 28.
(*t*) N. 47.
(*u*) Vid. ſupra ad n. 20.

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ſerv'd in each of the ſtrata (and which have certainly been taken notice of by others alſo before me, as, for inſtance, by Maurice Hoffmann (*x*), when he deſcrib'd calculi "made up, of ſtriated laminæ, as it were) been ſometimes ſeen, but even ſtill more evident lines, or ſuch as went from the center itſelf, in one continued courſe, to the circumference, as by Baeumlinus (*y*), who ſaw, in calculi, which, in regard to the order of the colours, agree, in great meaſure, as he ſays, with ſome deſcrib'd by me, "ſaline ſpiculæ, as it were," running from the center to the circumference, "in the manner of ſtriæ," or lines, ſo that they ſeem'd to be made up "not ſo much of lamellæ," as of ſtriæ.

So Trew (*z*), in like manner, aſſerts that in another calculus, "no la-"mellated ſtructure could be found, but it rather ſeem'd that radii were "running out from the centre, to the circumference, though in an obſcure, "and confus'd manner," which the delineation, that is added, confirms (*a*). But Maurice Reverhorſt (*b*); not to omit thoſe who wrote before; when he delineates the ſections of one, or two calculi, out of a great number, that he had extracted from the gall-bladder of an old man, in one, indeed, ſhadows out a kind of cortex, in the form of a circle, but in both repreſents lines, of no inconſiderable thickneſs, going, in the manner of radii, from the center, to the periphery. And John Baptiſt Contulus (*c*), having given figures of ſtones, (ſuch as they are, and like the reſt of his performances) found in this cyſt, and among them, of one found by him, "which was diaphanous at its ex-"tremities," gives a ſection, as it ſeems, of another, alſo, taken from I know not where, in which, indeed, are ſeen many circular ſtrata, but a much greater number of lines, going from the center, to the circumference.

Moreover, I remember a peculiar ſpecies of calculi deſcrib'd by Malpighi (*d*), which he ſuppos'd to have been form'd by concretion, "from a kind of "mucous ſubſtance, that very much reſembled ſoap, or, rather, reſembled "camphor," he ſays, therefore, "that they are of a ſurprizing ſtructure, "for that they reſemble the lapis judaicus, and are made up, internally, "of elegant lamellæ, drawn from the circumference to the center, which "lamellæ are eaſily ſeparated one from another." And although he ſup-poſ'd it to have been generated "in the liver, and in the porus biliarius," I believe becauſe he had heard that a ſtone, which his friend Bonfiliolus preſerv'd, was found "in the liver" of a nobleman in Germany, yet he could not, for a certainty, know that another of this kind, which he ſays he had ſeen, "and which was diſcharg'd, together with the inteſtinal fæces, after great "pains, and a long jaundice," by a matron with whom he was acquainted, had been generated in the ſame place. For that ſome calculi, which have come from the gall-bladder, have been, without doubt, diſcharg'd by ſtool, will be ſhown below (*e*), and that in this cyſt alſo, concretions are ſometimes form'd, of a ſtructure very ſimilar to that whereof we ſpeak, may not only

(*x*) Eph. n. c. cent. 9 & 10. append. 1. obſ. 35.
(*y*) Commerc. litter. a. 1743. hebd. 28. n. 2.
(*z*) Ibid. hebd. 36. n. 4.
(*a*) Tab. 1. fig. 26.
(*b*) Diſſ. de motu bilis tab. 2. fig. 3.
(*c*) De lapidib. &c. c. 11.
(*d*) Op. poſth.
(*e*) N. 46.

be conjectur'd from what has been already ſaid, but will be confirm'd immediately, by other obſervations.

For that tranſparent calculus of Vater, which is taken notice of above by me (*f*), had not only very ſlender, ſaline, and ſhining, ſtriæ on its ſurface, but was alſo "concreted in the manner of ſtriæ:" or if there ſhould be any doubt about this, there certainly will be none in the deſcription, and figures, of thoſe two which I have pointed out from Morand (*g*). For both of theſe has ſplendid, and pellucid lamellæ, the one indeed with ſtrata lying round them, but the other without any, and going, in the manner of radii, from the centre to the circumference. And, lately, the illuſtrious Haller (*h*) has propos'd others "which were ſhining like chryſtal, and ſemipellucid," the ſubſtance of one of which calculi, that was ſpontaneouſly broken, "being al-"moſt like ſelenites, ſhining, and ſtretch'd out from a yellow center, in the "manner of radii, to the inveſting cortex, was made into cruſts, and ſmall "laminæ." The other calculi, which "were ſmaller, were, likewiſe, in-"ternally laminated, in the manner of ſelenites, and ſhining."

24. All theſe obſervations, join'd with the others, which I have before mention'd, of ſhining and pellucid gall-ſtones (*i*), will certainly induce you to ſuſpect that many of theſe calculi, which are diſcharg'd by ſtool, have been too haſtily ſuppos'd not to have been generated in the cyſt, but in the ſtomach, and inteſtines, and for this reaſon, becauſe they ſeem'd to be too far diſtant from the more general nature, and ſtructure, of cyſtic calculi. And one in particular which occurs to my mind, on this occaſion, is that deſcrib'd by Donatus (*k*), from Cornelius Gemma, and which ſhow'd, "internally, a "ſubſtance like the pureſt glaſs, or tranſparent chryſtal, with many ſtriæ, and "radii, jointly running into one center."

It ſeems, indeed, to be an objection to our ſuſpicion, that this concretion was "very large." But beſides that it will be ſhown below (*l*), how much the biliary ducts may be dilated, and even how much they have been found to be dilated, I would have you believe, with Gemma, from the ſeat of long-continu'd pain, and tenſion, in the right *ilium*, under the falſe ribs, not that it had been concreted in the inteſtinum cæcum, as he imagines, but that being delay'd there, in its paſſage downwards, it had gain'd a freſh addition of ſubſtance, on its external ſurface, which was partly of a brown, and partly of a black colour, and by this means had grown into that conſiderable bulk.

So I would have you ſuppoſe, that another large calculus, which is deſcrib'd, and delineated, by Bezoldus (*m*), had receiv'd additional ſtrata in its paſſage, that were much fewer in number, where "an almoſt chryſtalline "nucleus," had been form'd, which ſeems to be very properly repreſented in the plates, not without ſome ſtriæ being drawn from the center, to the circumference thereof. And the diſcharge of this calculus, had been preceded by pains of the right hypochondrium, of a much longer continuance: nor does Bezoldus, himſelf (*n*), fail to imagine it poſſible, that it might have come from the gall-bladder.

(*f*) N. 18.
(*g*) Ibid.
(*h*) Opuſc. pathol. obſ. 33. hiſt. 7.
(*i*) N. 18.
(*k*) Cap. 30. cit. ſupra ad n. 15.
(*l*) N. 46.
(*m*) Diſp. de cholelitho caſ. 2. & fig. 2 & 3.
(*n*) Ibid. n. 7.

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In regard to the two obſervations, of ſtones diſcharg'd from the inteſtines, which he immediately ſubjoins, the one large, the other ſmaller, you will determine as you think moſt proper. For the firſt, certainly, points out no ſeat of the long-continu'd pain in the belly, and the ſecond ſays not a word of pain. Yet when you read that a calculus is ſpoken of in the former, whoſe "internal ſhining ſubſtance ſhow'd mere circles, interſected with ſtriæ," and have examin'd the figures of Schroeckius the father, who was the obſerver (*o*), which agree very well with this deſcription; perhaps you will not ſuffer even this calculus to eſcape your ſuſpicion. But in regard to the leſſer concretion, of which you will find no more ſaid by the author, Brechtfeld (*p*), than by Bezoldus, if you enquire whether, as this calculus, like the three former, and that, moreover, which was ſeen by Malpighi (*q*), was diſcharg'd by a woman, it happen'd to be diſcharg'd by an old woman, as we know was the caſe in the three former obſervations; in regard to this leſſer concretion, I ſay, it will perhaps be ſufficient for you, that it was "internally "whitiſh, and ſhining, like chryſtal," ſuppoſing, that in a very ſuccinct, and cloſe deſcription, the ſtructure might eaſily be omitted, which, as in other pellucid concretions, alſo, taken notice of above (*r*), would, if the ſtones had been broken aſunder, probably have appear'd to be of the ſame kind, with that deſcrib'd in the laſt.

But leſt you ſhould, perhaps, be liable to indulge your ſuſpicions with too much freedom, call to mind, by way of contraſt, the obſervation of the celebrated Chomel (*s*): who found a ſacculus, in a decrepid matron, into which the coats of the inteſtinum duodenum had relax'd themſelves, containing a conſiderable number of calculi, of which if you read the deſcription, when examin'd externally, and, at the ſame time, know that they were made up, internally, of ſtrata lying round each other, and, pretty near to the center, of ſtriæ diſpos'd in the manner of radii, betwixt which, white and ſhining particles were interpos'd, you may very eaſily conſider them as biliary concretions. And yet you muſt of neceſſity acknowledge, with Chomel, that they were generated in the ſame inteſtine, unleſs you would rather chooſe to admit one of the hypotheſes, which I ſhall mention: I mean, either that this ſacculus had communicated with the ductus communis choledocus, where it paſſes obliquely betwixt the membranes of that inteſtine, and had receiv'd from this meatus, firſt one calculus, and then others, which had relax'd the membranes by their additional weight; or that the firſt calculus, immediately upon its detruſion from the duct, and its entrance into the inteſtine, had, from ſome cauſe or other, been detain'd there, and by overloading the coats, and by forcing them outwards, and downwards, had prepar'd a ſacculus for itſelf, and the other calculi, which were to come after.

But although you might, perhaps, confirm both explications, the former by the example of the ſacculus wherein were the ſame kind of ſtones as in the gall-bladder, which ſacculus ſeem'd, to the very experienc'd Galeati (*t*), to

(*o*) Eph. n. c. dec. 1. a. 9. obſ. 90. fig. 3 & 4.
(*p*) In act. med. Hafn. vol. 1. obſ. 100.
(*q*) Supra n. 23.
(*r*) N. 18.
(*s*) Hiſt. de l'acad. r. des ſc. a. 1710. obſ. anat.
(*t*) Comment. de bonon. ſc. inſt. t. 3. inter medic.

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be in that part, where the ductus communis choledocus had, now, come near to its termination: and the latter by the authority of no other perſon than Chomel himſelf, inaſmuch as he accounts for the formation of the facculus, from a calculus generated in the inteſtinum duodenum, nearly in the ſame manner as you account for it, from a calculus which had fallen therein: although, I ſay, you might, perhaps, make uſe of theſe arguments, yet I would not have you ſeem to be too ſuſpicious.

25. And I could wiſh that thoſe marks, which Reverhorſt (*u*) has ſuppos'd to be quite ſufficient, to diſtinguiſh cyſtic calculi, from calculi of the inteſtines, were, at all times, in effect, as ſufficient for this purpoſe, as they are, at ſometimes, really uſeful. His words are: "the proofs of theſe calculi, that is, whether they really come from the gall-bladder, or not, is "that thoſe which are biliary, not only take flame themſelves, when applied "to the flame, but, alſo, when thrown into water, by no means ſink to the "bottom, and even ſwim upon the ſurface, by reaſon of the oily particles "of the bile, of which theſe ſtones are compos'd."

However, not to inquire here in regard to other biliary calculi, whether they are to be thus diſtinguiſh'd from cyſtic concretions; Bidloo (*x*), at leaſt, when writing a few years after, "that calculi, ariſing from bile, ſwim "on the ſurface of water, and are inflammable by being applied to the fire, "of whatever colour, figure, or magnitude, they may be," has immediately added theſe words, *ut plurimum autem:* which muſt be ſuppos'd to ſignify that theſe marks, though general, are not univerſal, and without exceptions; though, whether this addition has been taken notice of, by any one of all that number, by whom theſe words of his are either quoted, or refer'd to, I do not very well know; I confeſs, however, that I myſelf have not attended to them, before this time.

Beſides, to ſpeak firſt of their lightneſs, as I ſhall ſpeak hereafter of their "inflammability;" Scheffelius (*y*) admoniſhes us, that Reverhorſt "is re"futed" by Valentine, "not only by a ſimilar calculus not ſwimming upon "water, but alſo by *ægagropoli*, or globular concretions, found in the in"teſtines of wild-goats, ſwimming in water, although they are not generated "in the gall-bladder." But I even find that Otto Heurnius has aſſerted, many years before all theſe (*z*), that three calculi, found by him in the gall-bladder, "had not ſwam upon the ſurface of water, when thrown upon it, "as many affirm they will, but had ſubſided." There is no doubt but he had thoſe authors in his eye, whom I have before mention'd (*a*), as Fernelius, Riolanus, and others, among whom was, alſo, Hollerius (*b*). Nevertheleſs, men of the moſt conſiderable reputation ſtill continu'd to follow theſe authors, and Reverhorſt, for a long time, out of whom it is ſufficient to have mention'd Ruyſch (*c*), and Bergerus (*d*): nor are ſome perſons wanting ſtill to follow them, as they aſſert, without any exception, that theſe calculi all ſwim in water.

(*u*) Diſſ. de motu bil. §. 57.
(*x*) Vindic. contra Ruyſch.
(*y*) Differt. de Lithiaſi fell. §. 14.
(*z*) Obſ. cit. ſupra ad n. 22.
(*a*) Animadv. ibid. indicata.
(*b*) De morb. intern. l. 1. ſchol. ad c. 48.
(*c*) Theſaur. anat. 5. n. 32.
(*d*) Phyſiolog. med. l. 1. c. 14.

And, indeed, ſuch was the ſucceſs of the experiments with them: as it was with others, likewiſe, either at that time, or afterwards, as with Cunradus (*e*), Tremelius (*f*), Trew (*g*), the Edinburghers (*h*), and others. But with ſome the experiments did not at all anſwer, as with Jo. Conrad. Fabricius (*i*), or did not anſwer wholly, though in part they did anſwer, as with Lanciſi (*k*), who ſaw ten of them "ſubſide in wine and water," which very calculi, nevertheleſs, "ſwam in vinegar," as with Weitbrecht (*l*), who, in making the experiment upon the ſame number, found, "that if thrown into water, immediately upon their being taken out from the cyſt, they were ſpecifically heavier than water, but that when they were dried, they became lighter."

I, however, having firſt obſerv'd ſome (*m*), and afterwards a great number, to ſink down in water, reſolv'd to inquire whether theſe exceptions could be reduc'd to any certain heads. And I ſoon perceiv'd (*n*), that no exception could be drawn from the colour. I inquired therefore, whether they could be taken from any other property. But it will be eaſy for you to ſee, from thoſe obſervations which I have communicated to Schroeckius (*o*), how difficult it muſt be to determine any thing of this nature, in ſo great a variety, not only betwixt different calculi, but alſo betwixt the ſame, if you only change the time, or any other circumſtance. Yet when you have read what I have written on this ſubject, upon more than one occaſion, you will learn ſome hints, that are uſeful to prevent us from forming too haſty a judgment of the ſituation, in which calculi, that occur to us, have been generated; you will alſo find ſome obſervations, which have been ſince given almoſt in the ſame manner, even by an illuſtrious phyſician, whether he had read them in my works or not.

But when you inquire from whence it happens, that ſome of theſe calculi ſwim, and others ſubſide, whether becauſe in the former is a greater quantity, and in the latter, a leſs quantity, of the oleoſe particles, which, either by reaſon of their certain figure, leaving a great number of ſpaces betwixt each other, or from ſome different cauſe, are wont to ſwim upon water, as we ſee oils and reſins in general do, or becauſe the firſt mention'd kind of concretions, of whatever matter they conſiſt, have more intervals of this kind interſpers'd betwixt their component parts, that is, intervals fill'd up with air, a very great quantity of which, the celebrated Haller (*p*) makes no ſcruple to ſuppoſe, from the obſervation of Hales, is actually contain'd in bilious calculi; I ſay, when you inquire into this circumſtance, then you will, perhaps, not be diſpleas'd with the obſervations, that I have made upon the bubbles which are diſcharg'd from, or adhere to, them in water, if they ſhould happen to have any tendency to explain the return, in particular, of thoſe which, having firſt fallen down, reſtore themſelves again to the ſurface, or, at leaſt, endeavour to reſtore themſelves.

(*e*) Eph. n. c. dec. 3. a. 9 & 10. obſ. 171. ad n. 7.
(*f*) Act. n. c. tom. 8. obſ. 10. ad d.
(*g*) Loco indicato ſupra ad n. 23.
(*h*) Cit. ſupra ad. n. 13.
(*i*) Propemptic. cit. ſupra ad n. 15.
(*k*) De ſubit. mort. l. 1. c. 20. n. 4.
(*l*) Cit. ſupra ad n. 17.
(*m*) Epiſt. anat. 1. n. 43.
(*n*) Ibid. n. 45. 46.
(*o*) Obſ. indic. ſupra ad n. 20.
(*p*) Ad Boer. prælect. §. 250. not. r.

It will alſo be of uſe in your inquiry, to compare my obſervations with thoſe things, which my friend Stancario (*q*) has formerly hinted, of bubbles adhering to other immers'd bodies, and of their power in raiſing them up in the circumambient fluid, and which Petit, the phyſician (*r*), has much more copiouſly proſecuted. In reading of whom, you will likewiſe learn the effect, which heat, added to the water, will have in cauſing thoſe bodies, that would otherwiſe ſwim, to deſcend: and this circumſtance being transferr'd to bilious calculi, ſhows another cauſe, moreover, from whence the experiments may vary, and would even render theſe experiments, which I, in general, made in the cold ſeaſons of the year, after the publication of the firſt Epiſtola Anatomica, liable to ſuſpicion with me, if I had not made them with water juſt warm, but not hot.

26. But the reaſon of their inflammability is too obvious to need our preſent inquiry. Yet I do not remember that any mention was made of this property, before the times of Corteſius (*s*), who ſays, "it is found by experi-"ence, that ſtones generated in the gall-bladder burn like fat." Who after him has affirm'd that this property is common to them all, which ſome even ſtill ſeem to believe; and who has admoniſh'd us that this is true of them "in "general" only, was ſhown you a little while ago (*t*). And what various obſervations I have made upon the burning of different calculi, and what kind I have ſeen take, cheriſh, and preſerve the flame, and what I have ſeen do the contrary, is not only ſaid in the Adverſaria (*u*), and in that Epiſtola Anatomica (*x*), but alſo in the latter part of the other letter which I ſent to Schroeckius (*y*).

From theſe writings you will learn many things, but this in particular, that thoſe remarks, which are delivered by a certain celebrated writer in medicine, in regard to "all" bilious calculi, even all that are in appearance of a certain nature, are not to be underſtood to relate to all, upon which I, and others, have made experiments, but to all, upon which he, himſelf, has made them. There is no doubt but under the ſame external appearance, a different nature, and number, of component particles may lie hid, in different calculi: nay they ſometimes do not lie hid, if you examine them with great accuracy. To that illuſtrious man Haller (*z*), who choſe to apply a great number of different calculi to the fire, inſtead of throwing them into water, it happen'd, that except thoſe which he calls calcarious, all the others took flame, and among thoſe the black ones likewiſe.

But were theſe internally black alſo? At leaſt in deſcribing them to be black, in the ſecond, tenth, and eleventh hiſtories, in the latter, and, in like manner, in the tenth, he mentions, nothing but an "external cruſt," or nothing but a "ſhell," which were "black;" and in the ſecond, he ſays "that "when the outer ſhell was taken off, which was black, and thin, a bilious "yellowneſs ſucceeded." You find, therefore, from an accurate deſcription, that the nature of thoſe which were inflammable in his experiments, was different from the nature of others which, being black, not only externally, but internally alſo, or internally, in particular, very black, I have ſaid did

(*q*) Vid. Valliſner. oper. t. 1. p. 6.
(*r*) Mem. de l'acad. r. des ſc. a. 1731.
(*s*) Miſcell. med. dec. 2. c. 9.
(*t*) N. 25.
(*u*) III. animad. 28.
(*x*) N. 49.
(*y*) Obſ. indicata ſupra ad n. 20.
(*z*) Opuſc. pathol. obſ. 33.

not take the flame, or when taken, did not preſerve it, by which experiments, chiefly, it is made commonly known, that there are ſome calculi which are not inflammable. And to theſe I afterwards added others, though not black ones, which, in like manner, had not any inflammable principles; but of theſe there is no neceſſity to take notice here.

27. After making ſo long a diſcourſe upon theſe calculi, particularly that they may be diſtinguiſh'd from other concretions, when diſcharg'd from the body, it becomes proper now, to ſay ſomething of aſcertaining their exiſtence, if poſſible, when they lie latent within their veſicle, leſt you ſhould ſuppoſe that I have forgotten what it was that drew me into this long treatiſe. For it was the reprehenſion of him, who had pronounc'd that an obſtinate, or returning, jaundice was a "certain" ſign of the exiſtence of theſe calculi, which gave riſe to my diſcourſe. But with how much more caution does Fernelius give his opinion (*a*), who only ſays, that we "ought in this caſe to be ſuſpicious "of theſe calculi;" and yet he laid this down, in particular, if both the cyſtic ducts, that is the hepaticus, and communis (*b*), were obſtructed.

But, if even a jaundice of that kind, is no certain ſign of gall-ſtones, it is not eaſy to ſay how much thoſe gentlemen have been deceiv'd, who have imagin'd that they could not exiſt without a jaundice. And, in order to root out this notion entirely, from the minds of ſome phyſicians, where it yet remains, I can with the greateſt certainty affirm, that notwithſtanding the whole number of bodies, in whoſe gall-bladders I have found calculi, is nineteen, and the number in which Valſalva found them four, yet not one of all theſe had been affected with a jaundice. But as three of Valſalva's obſervations, and as many of mine, relate to letters which I ſhall hereafter write to you (*c*), you may, in the mean while, turn again to thoſe fourteen which I have already ſent you, in different letters (*d*), and join them with theſe three that I ſhall immediately ſubjoin.

28. A poor old woman had receiv'd a violent blow upon her head, by a fall: of which alone were all her complaints as long as ſhe liv'd; and ſhe liv'd not a few days, till at length ſhe gradually ſunk away and died. This patient had no inequality of the pulſe, no traces of a jaundice. And the reaſon of my making this remark will appear, when I tell you what I obſerv'd in the heart, and the gall-bladder, while I was buſied in purſuits of quite a different nature. For I did not even diſſect the body, that I might know what detriment ſhe had receiv'd from her fall.

The body was fat, and yet the ſkin very hard. In the thorax nothing occur'd to me that was worthy of remark; for to ſome of thoſe who were preſent, it ſeem'd otherwiſe, in regard to a polypous concretion, that we found in the right auricle of the heart, which was whitiſh, and if you attempted to diſſolve it with your hand, gave conſiderable reſiſtance, as if we did not frequently ſee a cruſt of this kind lying on the ſurface of blood, which has been taken from a vein, and coagulated, or, as if this woman had been ſubject to

(*a*) Pathолog. l. 6. c. 5.
(*b*) Vid. ejuſd. phyſiolog. l. 1. c. 7. vid. etiam infra n. 33.
(*c*) Vid. epiſt. 38. n. 20. epiſt. 49. n. 2. epiſt. 56. n. 7. 9. 31. epiſt. 57. 10.
(*d*) Vid. ep. 3. n. 4. ep. 4. n. 13. ep. 5. n. 6. & 19. ep. 21. n. 2. 30 & 36. ep. 24. n. 16. ep. 26. n. 21. ep. 27. n. 2. ep. 30. n. 14. ep. 34. n. 15. ep. 35. n. 16. ep. 36. n. 4.

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an inequality of pulſe, which they are ſo fond of attributing to polypi of the heart.

In the belly, the ſtomach appear'd to be almoſt double, ſo ſuddenly was that cavity contracted, before it came to the antrum pylori.

The gall-bladder was half-full of bile, and, being of a bright yellow like orpiment, had ting'd all the neighbouring parts with the ſame colour. In this bile were ten calculi, of an unequal magnitude, among themſelves, but none of them ſmall. Other circumſtances which relate to them, you will read in the letter to Schroeckius (*e*); for this is that woman of whom I there ſpoke in the third place, ſhowing where, and at what time, I diſſected her.

And from thence you may alſo learn, in like manner, what relates to another woman, the remaining part of whoſe hiſtory I ſhall immediately add: for it is ſhe who is ſpoken of, in the firſt place, in that letter.

29. A woman ſomewhat younger than the former, yet almoſt ſixty years of age, who was not only far from having an icteric colour, but endow'd with a very good complexion, was much given to drinking, and had been ſeven times married: this woman having complain'd of no other diſorder, but of an inflammation of the thorax, of which ſhe died, was diſſected by me, not on account of her diſeaſe, but in order to examine into the abdominal viſcera, and had ſome appearances in the genitals, but ſtill more in the gall-bladder, which are not unworthy of being tranſcrib'd here.

The uterus had a tubercle externally, on the upper part of its fundus, of the figure, and magnitude, of a ſmall filbert, partly prominent, and partly latent within the ſubſtance of the uterus, of a ſcirrhous hardneſs, of a white colour, both internally, and externally, and conſiſting of many different ſmall parts which, in ſome meaſure, reſembled cells contracted into themſelves. And within the cavity of the uterus, from the middle and anterior part of the fundus, roſe up a ſoft, and almoſt gelatinous excreſcence. But although the teſtes, as was to be ſuppos'd from her age, were much ſhrivell'd, and very narrow, yet the cervix uteri, and vagina, appear'd differently from what you would have expected in the wife of ſeven men. For in the latter part, were ſtill a great number of rugæ, prominent, even to half the extent of it, longitudinally; and in the former, the figure approaching to that of a virgin-cervix, and the valves, which were preſerv'd on one ſide, made me ſuppoſe, that ſhe had been the mother of very few children, which was alſo confirm'd by the ſlender rugæ, in the lower part of the abdomen.

But as to the gall-bladder, although it was much ſhorter than in proportion to the magnitude of the liver (which was, in other reſpects, of its uſual ſound appearance) for it did not reach, with its fundus, ſo low as the edge of the liver, but was diſtant therefrom by almoſt two inches; it nevertheleſs contain'd, together with a ſmall quantity of bile, at leaſt three hundred and thirty calculi, which were chiefly very ſmall, as the ſhortneſs of the cyſt, that I have deſcrib'd, would of itſelf argue. As to the other remarks I made upon theſe calculi, I have ſaid juſt now (*f*), where they may be met with: although in that letter, not only many typographical errors are admitted, but in the part, in particular, to which I refer, more than one whole line is omitted. Beſides

(*e*) Vid. in act. n. c. tom. 2. ob. 167. (*f*) N. 28.

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the great number of calculi which I have mention'd, and which occupied the cavity of the cyſt, I diſcover'd one with the knife that lay hid between the coats of this veſicle, which, in the blackneſs of its colour, and the ſmallneſs of its ſize, was very much like thoſe that I took notice of above (*g*), as having been found in the glands of the cyſt, at other times; yet the orifice of the gland was not ſo evidently laid open here.

30. The body of a very old man, who had been by trade a ſhoemaker, and who, by reaſon of his great age, was almoſt toothleſs, and had died partly of old age, and partly of a catarrh, within the ſpace of three days, but without a fever, as was ſaid, and certainly without a jaundice, as was manifeſt from the whiteneſs of his ſkin, was brought into the college about the end of January, in the year 1744, when I was teaching anatomy. As the whole of his body therefore, was carefully diſſected, I will here relate all the præternatural appearances which I ſaw, beginning with thoſe that were obſerv'd laſt of all.

The upper part of the cranium being taken away with difficulty, by reaſon of the very cloſe adheſion of the dura mater, ſo that the external lamina of this membrane remain'd fix'd to the os frontis, the cerebrum and cerebellum were both of them found to be pretty ſoft, and ſomewhat brown in the medullary ſubſtance: the three ventricles of the cerebrum were full of pellucid and pure water: the plexus choroides were pale: the pineal gland was diſtended into the form and magnitude of a middle-ſiz'd grape, by a watry humour, as it ſeem'd: but the glandula pituitaria, if you look'd down upon it from above, was contracted, and ſunk in its ſituation. The arteries that run upon the baſis of the cerebrum, though they were not diſtended with blood, like the ſanguiferous veſſels within the ventricles, but were even empty, appear'd nevertheleſs, both in their trunks and branches, to be wider than they naturally are.

In the cavity of the thorax was a ſmall quantity of turbid and brown water. The lungs were collaps'd, and fallen down to the back, in conſequence of their being almoſt quite diſjoin'd from the pleura. As the heart was larger than it naturally is, ſo the trunk of the aorta was alſo wider. And the valves prefix'd to this veſſel, at the *aggeres*, as Valſalva call'd them, were become bony; and even one ſide of one of them conſiſted of a bony ſcale. But although through the whole trunk of the aorta, on its internal ſurface, and even the iliac branches of it, a whiteneſs was much more frequently propagated, here and there, than bony ſcales, yet I ſaw one of theſe in the curvature, and another near the third pair of lumbar nerves, neither of them very ſmall, and both intercepted, by the internal membrane of the artery on one ſide, and on the other, by the fleſhy annular fibres: and indeed there was a perfect oſſification at the diviſion of one iliac artery, into the external, and internal.

Beſides, as the trunk of the aorta itſelf began to bend its courſe towards the left ſide, below the emulgents, and return again to the right ſide, before it gave off the iliacs, ſo the ſame kind of diſorder, or unuſual appearance, was continu'd into the iliac veſſels, to ſuch a degree, that, by their

(*g*) N. 21.

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frequent flexions, they nearly reſembled the ſplenic artery. Nor were the carotids, and vertebrals, entirely free from this irregular diſpoſition. And theſe flexions of the branches prevented me from attributing the incurvation of the trunk, juſt now deſcrib'd, altogether to the contiguous exoſtoſes of the lumbar vertebræ, the appearance of which was as follows.

Thoſe thick ligaments, that are interpos'd betwixt the bodies of all theſe vertebræ, except the lower, were ſo prominent on their anterior ſurface, and eſpecially on each ſide, like an air-bubble, that theſe prominences, on the right, and on the left ſide, were almoſt equal to the breadth of my little finger. All the prominences on the left ſide, whether becauſe they had begun to be form'd before the others, or from what other cauſe ſoever, were bony. But of the right, that only ſeem'd to be bony, which correſponded to the interval betwixt the third and fourth vertebræ; yet it was not ſo; but a bony lamina, that form'd the ſurface of the body of the fourth vertebra, lifted itſelf above the level of the vertebræ, and in its elevation was alſo produc'd upwards, by which means it cover'd that prominence over with a bony cruſt: under which cruſt the nature of the prominent ligament was preſerv'd. When I cut aſunder one of the prominences on the left ſide, with a chiſel, and the ligament, that was continued therefrom, with a knife tranſverſly, thoſe concentric lines it is true appear'd as uſual; but every thing was ting'd of a pale and almoſt cineritious colour.

At length, the other contents of the belly offer'd the following things that were worthy of obſervation. The omentum was annex'd, on the right ſide, not only to that part of the inteſtinum colon, which is neareſt to the beginning of it, but alſo to the ſmall inteſtines, that lie in the neighbourhood of that part, and to the peritonæum. The ſtomach was not only more narrow than uſual, but even was not a good figure. And the ring of the pylorus was ſomewhat ſwell'd in two places. Near to the other orifice, a certain roundiſh, and ſmall kind of gland, was internally prominent, into the cavity of the ſtomach, which, when cut into, was found to be an encyſted tumour; inaſmuch as it was made up of a ſubſtance that was white, firm, and compacted into one body, of the ſame figure; but this body could be very eaſily disjoin'd from the thin membrane, in which it was contain'd.

The orifice of the ſtomach which was neareſt to this tumour, that is the *ſtomackus*, as the ancients call'd it, was extremely large, as the gula which is continued therefrom was alſo, to the height of, at leaſt, four inches above the ſtomach, in the whole of which tract it was more red, internally, than the other parts. And indeed I ſaw that the foramen, which is open'd in the ſeptum tranſverſum, in order to tranſmit the œſophagus, was much bigger than uſual, particularly in its breadth, and that it terminated, at its upper extremity, by a right line tranſverſly, inſtead of an angle.

When I examin'd that part of the omentum, which adheres to the ſtomach, with diligence, I obſerv'd, on the left ſide, not far from the fundus of this viſcus, a kind of very ſmall ſpleen, like a gland, receiving its ſanguiferous veſſels from the omentum, in which it was, and very much ſimilar to the ſpleen in its colour, its coat, and the modification of its ſubſtance, unleſs that this laſt was ſomewhat more moiſt than that of the ſpleen, and of ſuch a figure, and magnitude, that it might be compar'd with the ſpleen of a middle-ſiz'd hen. Beſides this, another ſpleen was not wanting, which was found,

ſound, and correſponded with the ſize of the liver, that was, likewiſe, ſound, and of its uſual magnitude, or perhaps a little leſs.

In the gall-bladder, together with a ſmall quantity of viſcid bile, were ſix or ſeven calculi of no very ſmall ſize, the largeſt of which was not leſs than a middle ſiz'd grape, pretty nearly round in its figure, yet of an unequal ſurface, as if from other very ſmall calculi adhering to it. If you except ſome very ſmall points of a yellowiſh colour, that were ſcatter'd up and down, through this ſurface, they were all, both internally, and externally, extremely black, and reſembled a char-coal, not only in their colour, but even in their very ſubſtance. Moſt of theſe, after they were dried, fell into fragments ſpontaneouſly. And although they, before, ſeem'd to be light, yet thoſe which were thrown into water, immediately ſank to the bottom; and thoſe which were applied to the flame, could neither by any means be made to partake of that flame, nor yet be diſſolv'd in any part of them. One of the leſſer of theſe calculi was in that part, where the veſicle begins to contract itſelf into the duct; yet it had not prevented the diſcharge of the bile, as we obſerv'd by compreſſing the cyſt before we cut into it.

Finally, there being nothing in the kidnies worthy of attention, we open'd the urinary bladder, on the poſterior ſurface of which, above the orifice, appear'd a kind of white protuberance, like a ſmall inverted pylorus, ſomewhat larger, in its ſize, than the ſeminal caruncle was, to which it extended itſelf; yet the lower part of that protuberance, being contracted into a low and ſlender line, was prominent into the beginning of the urethra, and continu'd to the proſtate gland; ſo that as it was of the ſame ſubſtance of which this gland, conſiſted, it ſeem'd, beyond a doubt, to every one who was there preſent, and very much practis'd in the diſſections of theſe parts, that it was an excreſcence of the proſtate glands.

31. I heartily wiſh, as I have remark'd all the preternatural appearances, which were in the body of that old man, (for this reaſon, at leaſt, that nothing ſhould eſcape you, which, ſometimes, may happen to be the occult cauſe of a conſiderable diſorder) that we were not in the dark as to the effects of them, or the greater part of them, which had preceded in the living body. But it is ſufficient, at preſent, to have known this, that although the gall-bladder contain'd theſe calculi, the man had, nevertheleſs, not been icteric, any more than the women I have before deſcrib'd, and ſo many others pointed out above *(b)*. Which, if it had happen'd to me only to obſerve it, I could the more eaſily forgive thoſe who ſtill hold a contrary opinion, for neglecting, or affecting not to know.

But beſides the obſervations of men of gravity, and authority, which I have produc'd in a former work *(i)*, and thoſe of Valſalva, that I have refer'd to *(k)*, there are ſo many others over and above, that I believe it is ſcarcely poſſible for me to enumerate them all. Let it be ſufficient therefore, to have added ſome to thoſe formerly taken notice of. Lælius a Fonte *(l)* ſays, that in the body of a biſhop, who was an old man, "the gall-bladder was found full of light ſtones, and yet that he had never been at-

(*b*) N. 27.
(*i*) Epiſt. anat. 1. *n.* 50. 51.
(*k*) Supra n. 27.
(*l*) Conſult med. 139. in fin.

"tack'd

" tack'd with a jaundice." Pechlinus *(m)* teſtifies the very ſame thing of an old woman, and of a woman who was publicly executed at Leipſic, Etmuller *(n)*, as ſhe had " in her gall-bladder, great plenty of large, and ſmall " ſtones," and our Valliſneri *(o)* aſſerts that he had, at one time, found many bilious calculi, and, at another, one large calculus, in the carcaſes of many perſons who had " never" been affected with a jaundice.

How many cyſtic calculi Baeumlinus *(p)* found in that woman, in whom " any thing icteric" had not appear'd; how many Fabricius *(q)*, in a woman who " in all appearance was healthy;" and, finally, how many Haller *(r)* found in another, who ſeem'd to be " very healthy," and, likewiſe, in an old woman, in whom were " no ſigns of jaundice," you may yourſelf ſee: nor indeed will you ſuſpect, I ſuppoſe, that in a great number of other hiſtories, given by this author, wherein there is no mention of the jaundice, this diſorder, probably, might not have been wanting, when you obſerve that, where he collects the ſubſtance of them together, he ſays, theſe calculi " were, for " the moſt part, unattended with a jaundice, as was certain from his own " experience *(s)*."

Others, and among theſe Vaterus *(t)*, I purpoſely paſs over, ſince to the authors that I have nam'd, it is neceſſary not only to add thoſe whom I ſhall preſently *(u)* bring to bear witneſs, that they had ſeen no kind of diſorder whatever, join'd with theſe calculi, but thoſe alſo who, in deſcribing, or making mention of, other ſymptoms, or diſorders, of perſons in whom were cyſtic calculi, have paſs'd over the jaundice entirely, though a diſorder that muſt have occur'd to their eyes, even in ſpite of themſelves: and in the number of theſe do not imagine there are only Reverhorſt *(x)*, Contulus *(y)*, Riedlinus *(z)*, Hoffmann *(a)*, Baſſius *(b)*, and others of the more modern. Do but turn to the Sepulchretum. You will find Bonetus *(c)*, Morton *(d)*, Greiſelius *(e)*, Kentmannus *(f)*, Huldedreichius *(g)*, Cnoffelius *(h)*, and others; for I have not time to refer you to every one of them, in particular, in reading of whoſe hiſtories I could not ſuffer myſelf to ſuppoſe, that they would ſo readily have paſs'd over the jaundice, if their patients had been affected therewith.

32. How is it then, you will ſay, that there are ſo many witneſſes on the other hand, and produc'd even in the Sepulchretum itſelf, that have ſeen this diſorder join'd with cyſtic calculi? Not for this reaſon, certainly, that if theſe are ſuppos'd to exiſt, the other muſt neceſſarily be ſuppos'd to exiſt alſo. For if ſo, this diſorder muſt have been ſeen attending upon thoſe calculi by all. It muſt therefore be for ſome other reaſon. Thus, for the ſake of ex-

(m) Apud Scheffel. diſſ. cit. ſupra ad n. 13. §. 16.
(n) Prax. l. 1. ſ. 17. c. 3. art. 4.
(o) Adnot. cit. ſupra ad n. 13.
(p)
(q) Loc indic. ſupra ad n. 23.
(r) Opuſc. pathol. obſ. 33. hiſt. 7. & 11.
(s) Ibid. hiſt. 10.
(t) Diſſ. ſupra ad n. 16. cit. theſ. 9.
(u) N. 38 & ſeq.
(x) Diſſ. ſupra cit. ad n. 16.
(y) Loc. ſupra ad n. 23. cit. c. 25.
(z) Eph. n. c. cent. 3. obſ. 45.
(a) Cap. ſupra ad n. 15. cit. obſ. 1.
(b) Dec. 4. obſ. anat. 9.
(c) L. 2. ſ. 4. obſ. 35.
(d) S. 7. obſ. 43.
(e) S. 11. obſ. 46.
(f) L. 3. ſ. 7. obſ. 33.
(g) S. 14. obſ. 36.
(h) S. 17. obſ. 14. §. 5.

ample, and not to depart from the Sepulchretum, you have in the obſervation of Helwigius (*i*), a jaundice with theſe calculi, and with a liver, at the ſame time, lank, ſhrivel'd and putreſcent: you have them alſo in the obſervations of Veſalius (*k*), and Verzaſcha (*l*); but then you have alſo, at the ſame time, a liver that was enlarg'd, hard and green, or ſcirrhous, yellow, and pallid.

There is, at one time, inſtead of this kind of diſeaſes another diſeaſe, as when Beckerus (*m*) deſcribes calculi, found not only in the gall-bladder, but in the pori choledoci, in like manner. And at other times there are both of them. Thus Deodatus (*n*), and Dobrzenſkius (*o*), relate that there was an indurated liver, at the ſame time that there were calculi, both in the cyſt, and in thoſe ducts. And it is not ſurprizing, that the matter of the bile ſhould remain in the blood, and produce the regius morbus, when the liver can neither ſecrete it, nor diſcharge, from its own ſubſtance, that which is ſecreted, without preventing the ſecretion of the reſt. And that to this claſs alſo, the old obſervation (*p*) ought to be refer'd, which was taken from the mother of a profeſſor at Bologna, you would readily perceive, if the whole of it were produc'd.

You however muſt read this, as you will that of Veſalius which I juſt now pointed out, twice over in one and the ſame ſection; for it is that very obſervation (who would at firſt believe it) which is produc'd even below (*q*): as you will eaſily find out by comparing one with another, and by comparing them both with that which had been given in another ſection (*r*), or rather with the paſſages of Coiterus (*s*) relative to this ſubject, who is the author that took the obſervation; for although it is ſo many times repeated in the Sepulchretum, yet the doubt of the author is always neglected, which for many reaſons ought not to have been omitted; for he did not ſay "ſhe had "labour'd under the jaundice" but "ſhe had, if I am not miſtaken, la-"bour'd under the jaundice."

You ſee, therefore, that the teſtimonies produc'd are weaken'd, if any one attends to them rightly, and that their number is, at the ſame time, diminiſh'd, when it is demonſtrated that one ſingle teſtimony is produc'd twice over, as if it had been a double atteſtation. Thus you will alſo find the obſervation of Timæus (*t*) repeated, juſt as you will that of Guarinoni (*u*), and others perhaps: but in none will you be more ſurpriz'd, than in that of Fontanus (*x*), which, having been juſt before given under number twenty-two, is immediately given over again in every ſenſe, and effect, and indeed almoſt in the ſame words, under number twenty-three.

Yet the two laſt obſervations relate to quite another claſs, than that of cyſtic calculi being join'd with the jaundice indeed, but, at the ſame time, with either a conſiderable diſorder of the liver, or an obſtruction of the bi-

(*i*) Ibid. ſ. 7. in additam. obſ. 1.
(*k*) S. 18. obſ. 8. §. 4. cum obſ. 20.
(*l*) Ibid. in addit. obſ. 6.
(*m*) Sect. ead. obſ. 8. §. 1.
(*n*) Ibid. §. 10.
(*o*) S. 16. obſ. 5.
(*p*) S. 18. obſ. 8. §. 5.
(*q*) Ibid. obſ. 25. §. 6.
(*r*) S. 8. obſ. 36.
(*s*) Obſ. anat.
(*t*) S. 18. obſ. 8. §. 11. & obſ. 25. §. 4.
(*u*) Ibid. obſ. 33. & in additam. obſ. 5.
(*x*) Sect. ead.

liary

liary canals, to which the two former, and ſome others much more recently publiſh'd, belong. And one of theſe, if it be produc'd, may eaſily have its teſtimony leſſen'd in a different manner; as when Vaterus (*y*) ſays that a matron, in whoſe cyſt he found thirty calculi, had labour'd under the jaundice. For this we confeſs; but we at the ſame time attend to what he immediately ſubjoins, that being freed from the jaundice, ſhe had liv'd about three and twenty years in a ſtate of perfect health, and was at length carried off by an apoplexy. For if ſhe had been attack'd with the jaundice, merely as the effect of calculi, lying hid in the gall-bladder at that time, ſhe would not have paſs'd ſo long a ſpace of time as three and twenty years, during which the calculi not only exiſted, but were even increas'd, without being troubled with the jaundice.

And an anſwer of the ſame kind you will naturally give to them alſo, who would object the obſervations of Weitbrecht (*z*), and Galeati (*a*). For both of them found calculi in the gall-bladder after a jaundice which had long preceded: although you may alſo give this anſwer, that by the firſt the liver was found to be ſomewhat hard, at the ſame time; that by the ſecond it was found to be conſiderably hard, and crowded with a great number of tubercles; to ſay nothing of thoſe things that I hinted at above (*b*), from whence you may perceive, that different calculi may have been formerly in different ſituations, ſo as eaſily to prevent the bile from flowing into the inteſtines at that time.

But if any one ſhould oppoſe to theſe examples, others, in which not only a preceding jaundice, but a preſent one, was join'd with cyſtic calculi, as thoſe of Lanzonus (*c*), du Verney (*d*), Van Swieten (*e*), Haller (*f*), and other celebrated men, you have wherewithal ſufficiently to reply, from what has been juſt now ſaid. For the firſt ſaw the liver, at the ſame time, "beſet "with a great number of hydatids;" the ſecond ſo dried up, in one half of its ſubſtance, that it did not equal the thickneſs of a thumb, the third, "pal-"lid, hard, without moiſture, ... and rough with ſcirrhous tumours;" and the fourth, finally, although in ſo many hiſtories he only exhibits two of icteric bodies, the ſecond, and the ninth, yet in the former deſcribes the ſame viſcus as being "diſeas'd, and ulcerous," and in the latter, as being "in "great meaſure putrid, the gall-bladder being wholly conſum'd, ſo that the "calculus was found in the midſt of a putrid jelly as it were." And I ſuſpect that if other obſervations, of ſome authors, that are produc'd, had not been made haſtily, and by-the-by as it were, but had been taken, and communicated to the public, with great accuracy, it would have happen'd frequently, that we ſhould read of other marks of diſeaſe being found in the neighbouring parts, and particularly in the liver, within which, unleſs you ſearch after them, they may even lie hid.

Obſervations that are ſtill leſs recent, are ſometimes produc'd likewiſe; but to confeſs the truth, to very little effect, as, for inſtance, that of our Domi-

(*y*) Theſ. 9. cit. ſupra ad n. 31.
(*z*) Cit. ſupra ad n. 17.
(*a*) Cit. ſupra ad n. 24.
(*b*) Ibid.
(*c*) Eph. n. c. dec. 3. a. 3. obſ. 36.
(*d*) Cit. ſupra ad n. 13.
(*e*) Ad §. 950. cit. ſupra ad n. 15.
(*f*) Opuſc. pathol. obſ. 33.

nic de Marchettis *(g)*, as if he had ſaid that he had ſeen a jaundice from cyſtic calculi. But he, when he ſays "the veſicle being obſtructed by any matter, "or by a ſtone, (for I have ſometimes found in this veſicle, three or four "ſtones of the bigneſs of a vetch) a yellow jaundice is brought on;" ſays, indeed, that ſtones had been found there by him; but that he had found them in ſuch a ſituation as to obſtruct the meatus of the veſicle, and for that reaſon bring on jaundice, he certainly does not ſay.

33. But ſetting aſide all theſe, and other ſimilar obſervations, on account of thoſe animadverſions which I have hitherto hinted at, as ſome ſtill remain to which none of theſe objections can, perhaps, be made, you will enquire of me, in what manner calculi of the gall-bladder may, ſometimes, bring on a jaundice in human bodies, and whether in that manner which Marchettus and others have imagin'd, if they obſtruct the veſicle, or rather the duct which is proper to it, that is the cyſtic duct.

For that the cyſt has been obſtructed without a jaundice, is certain even from the obſervations which I took notice of above *(h)* for inſtance, when it was full of ſtones. And altho' when it is full of theſe it can diſcharge no bile, and conſequently it comes juſt to the ſame thing, as if the meatus were really ſhut up; yet to ſatisfy you I will produce, below *(i)*, obſervations of that meatus being ſtop'd up, without a jaundice; but here I will only call to mind what is demonſtrated above *(k)*, that it is not through the ductus cyſticus, but through the hepaticus, and communis, that bile is ſent from the liver to the inteſtines; ſo that unleſs theſe paſſages be obſtructed, either by an excreſcence, or by ſome conſtriction, or by a viſcid, and thick matter, or by calculi, generated either in theſe paſſages, or in the liver, or even in the cyſt, but puſh'd down into theſe paſſages, the bile cannot be retain'd in the liver, on account of the biliary paſſages; and therefore the matter, by which this fluid is conſtantly ſupplied, cannot be retain'd in the ſanguiferous veſſels, in order to bring on a jaundice.

Yet we muſt be cautious, leſt at any time we fall into errors, in regard to the words which are us'd by ancient obſervers, to ſignify the ductus hepaticus, or communis, and ſuppoſe them to mean the cyſtic duct inſtead of the other. For they, according to the tenor of the opinions of their times, took either one or the other of theſe ducts for the meatus of the cyſt, as I have even ſhown before *(l)*, in explaining a paſſage of Fernelius; and the cyſtic duct, as you may ſee in Mundinus *(m)*, they call'd by the name of *collum veſiculæ* or neck of the gall-bladder, and not by the name of pore, meatus, or duct.

Therefore, when you read in Donatus *(n)*, of Albucaſis having taught, and Nicolus having confirm'd, "that a fleſhy excreſcence ariſes in the meatus of "the gall-bladder, which, by ſtopping it up, is the cauſe of an incurable "jaundice," although I have ſaid *(o)* that this has even been found by me formerly, in the veſicle itſelf, yet do not be haſty to believe that the excreſcence, of which they ſpeak, was ſuppos'd, by them, to be form'd in this

(g) Anat. c. 4.
(h) N. 31.
(i) N. 39.
(k) N. 10.
(l) N. 27.
(m) Anat. ubi de kyſti fell.
(n) De med. hiſt. mirab. l. 5. c. 3.
(o) Supra n. 20.

veſicle,

veſicle, or in the cyſtic duct, inaſmuch as it muſt have ſtopp'd up ſome other paſſage beſides this, in order to have been the real cauſe of a jaundice.

Thus when Gentilis, as is hinted at above *(p)*, has aſſerted that he had found a ſtone "in the pore, or meatus, of the gall-bladder;" you muſt conſider what you are to underſtand thereby. The very reading of the Sepulchretum will render you cautious in this reſpect, where Camenicenus *(q)* writes thus to Mathiolus: "the meatus which goes from the gall-bladder, "into the liver, was quite free and open," that is the hepatic duct. And he had ſaid a little before, "the meatus going from the gall-bladder, and "terminating in the inteſtine, was obſtructed by a ſtone:" and that this was not the ductus cyſticus, but the communis, you may be aſſur'd not only from what has been ſaid, but alſo from this circumſtance, that in the icteric body in queſtion, "the gall-bladder was extremely full of bile."

Nor will you underſtand differently, theſe words in the obſervation of Coiterus *(r)*, "in the paſſage from the gall-bladder, to the duodendum, "was a large calculus, which totally obſtructed that paſſage, on all ſides," eſpecially when you obſerve that the folliculus fellis is ſo deſcrib'd by himſelf *(s)*, in another place, that without making any mention of the cyſtic duct, he ſays "it is provided with two pores, or paſſages, one by which "it draws bile from the liver, the other by which it tranſmits the bile, "from itſelf, into the inteſtinum duodendum." For there is no doubt but he has follow'd the dogmas of his preceptor Falloppius *(t)*, in that point, ſo as to conſider the ductus cyſticus in the manner the ancients did, that is as the neck of the bladder; yet not ſo far as to acknowledge, that the bile was carried from the liver, to the inteſtine, by one meatus, and that a ſtrait one, "on which meatus, about the middle of its courſe, nature has planted a "bladder with its neck."

34. It is not the cyſtic duct, therefore, but the hepatic, which (for though we acknowledge it to be one, yet for the ſake of cuſtom, and more clear doctrine only, we divide it into the hepaticus and communis) I ſay it is not the cyſtic, but the hepatic, which we require to be obſtructed, either by an excreſcence, or by a calculus, which has even been frequently obſerv'd there by Falloppius *(u)*, or by a thick and viſcid matter, in ſome other manner, in order to make us confeſs, that the jaundice has ariſen from the diſorder of the more conſiderable paſſages of the bile. For that they may be obſtructed, not only by viſcid, or thick matter, but even by the bile itſelf, I do not doubt, as I formerly found, in a dog that had been much diſorder'd, the extremity not only of the pancreatic duct, but, alſo, of the ductus communis, ſhut up by means of a kind of gypſeous, and yellowiſh matter, concreted there: and we read Etmuller *(x)* deſcribing, in an icteric body at Leipſic, "the lower pore, "or meatus, entirely obſtructed by a viſcid pituita, ſo that after cutting away "this biliary meatus, not ſo much as a drop of bile flow'd out, becauſe the "bile, which was contain'd there, was very thick, and tenacious.

(p) N. 15.
(q) L. 3. ſ. 18. obſ. 8. §. 12.
(r) Ibid. ſ. 8. obſ. 36.
(s) Tab. intern. hum. corp. part.
(t) Obſ. anat.
(u) Ibid.
(x) Art. ſupra cit. ad n. 31.

But I know that you may take occaſion to interrupt me here, and enquire why then the noble Frenchman, whom Sculteſus *(y)* diſſected, as he had "the porus biliarius, in that part where it is inſerted into the duodenum, ſo far obſtructed with a ſtone, equal to a large pea in its ſize, that not the leaſt "quantity of bile could be thrown out thereby," had not, nevertheleſs, been affected with a jaundice? And in ſo ſingular a caſe, unleſs I ſhould chooſe to have recourſe to thoſe conſtitutions of the blood *(z)*, in which the matter that ſupplies the bile, and even the bile itſelf, can ſcarcely give any tinge of yellowneſs, I am under a neceſſity of ſuppoſing that there was ſome peculiar diſpoſition of the biliary paſſages: ſuch, for inſtance, as Falloppius *(a)* aſſerts had been ſeen by him, two or three times, that is to ſay, the ductus communis "divided into a double canal," a little above the inteſtinum duodenum: which diviſion, but betwixt the coats of the ſame inteſtine, "into "two conſiderable branches, that open'd by ſeparate orifices, within the in-"teſtine," was once ſeen, likewiſe, by Abraham Vater *(b)*.

For ſuppoſing one of theſe orifices to be obſtructed, a paſſage ſtill remains open through the other, for the bile to go to the inteſtines. There alſo might be ſome other more uncommon duct, like that which Veſlingius found, and was examin'd by Bartholin *(c)*, in a woman "of a good habit, "fat, and pretty healthy," when the cyſt was ſtufi'd up, and obſtructed, by calculi, and which "went from the liver, in the neighbourhood even of "the porus biliarius, that was fill'd up with calculi, and terminated in the "inteſtinum jejunum," or that which Bezoldus deſcribes, as being ſeen by him *(d)*, and which, according to the figure he gives of it, is very ſimilar to that of Veſlingius, provided it did not go to the ductus communis, but to the inteſtines, or thoſe that the ſame author takes notice of *(e)* as having been demonſtrated by Diemerbroeck, which were produc'd, ſeparately from the ductus communis, betwixt the veſicle and the inteſtines; ſo that a great part of the bile might either be carried immediately to the inteſtines, in a direct paſſage, or through the more general paſſage of the ductus communis.

But as to the obſervations of Andreas a Lacuna, which he immediately ſubjoins, and which, in part, relate to thoſe obſervations that I have refer'd to above *(f)*, of ſtones being form'd, by concretion, in the cyſt, without a jaundice, and, on that account, produc'd in the firſt of the Epiſtolæ Anatomicæ (*g*), if he could have read them rather in the words of the author himſelf, than in thoſe of Riolanus, he would have choſen to make uſe of the words of the former, in preference to thoſe of the latter, inaſmuch as Riolanus, by a ſlip of his memory, has related three things in three lines, that by no means agree with thoſe which Andreas had ſaid. But let us omit theſe conſiderations, and go on to others.

35. As I advanc'd four kinds of cauſes above (*h*), by which the common, or

(*y*) Obſ. cit. ſupra ad n. 18.
(*z*) Vid. ſupra n. 9.
(*a*) Obſ. cit.
(*b*) Diſſert. qua nonum bilis diverticulum &c. theſ. 7.
(*c*) Cent. 2. hiſt. anat. 54.
(*d*) Diſſ. de cholelitho §. 6. & fig. 1. litt. f.
(*e*) §. cit.
(*f*) N. 31.
(*g*) N. 50.
(*h*) N. 33.

hepatic,

hepatic, canal may be obſtructed, but produc'd examples of three only, you may perhaps wonder why I have produc'd no obſervation of the fourth, that is of conſtriction. But you will ceaſe to wonder, when, in reading over again the preſent very prolix letter, you obſerve this to have been done already *(i)*, as far as was poſſible, by examples pointed out from the Sepulchretum. But if you inquire after other inſtances, from different authors, they are by no means wanting. That is a very famous one, by reaſon of the eminence of the patient, which was taken from Andrew Mauroceni, a noble Venetian, who was illuſtrious both as a ſenator, and as an hiſtorian, and which is given us by his learned phyſician Aurelio Palazzoli *(k)*. For the cauſe of the jaundice, of which Mauroceni died, was an inſuperable conſtriction of the paſſages; inaſmuch as "the duct by which the bile is, chiefly, carried to the "inteſtines, had become callous."

Mead *(l)*, alſo in a body that had been troubled with an obſtinate jaundice, ſaw the ſame meatus, where it makes a coalition with the cyſtic duct, ſo contracted, as if a ligature had been made upon it, that "it would not "admit a probe;" nor could any portion of the bile, with which the gall-bladder and liver were diſtended, paſs on, by this way, to the inteſtines: and this contraction ſeem'd to have been brought on by a ſcirrhous, and even a cancerous, tumour of the neighbouring pancreas. And in the acts of the Cæſarean Academy *(m)*, an obſervation is extant of an icteric body, in which, by reaſon of a ſcirrhous pancreas, the ſame common canal was ſhut up at its termination, not without "a firm concretion."

Examples of the more rare cauſes therefore, which, either by condenſing the tube into a ſolid body, or by preſſing upon it externally, conſtringe the common duct of the bile, I have neither been backward to produce above, nor in this place, and ſhould do the ſame in regard to the more frequent cauſes of conſtriction, if the effects of theſe were as eaſily obſerv'd by the ſenſes, after death, as they are probable from reaſon, and agreeable therewith. I ſpeak of ſpaſmodic *criſpatures*, by which, at leaſt, the orifice of the common duct, or the greater part of the ſmall branches of the hepatic, are conſtring'd: unleſs we ſhould ſuppoſe that the obſervation of the celebrated Jo. George Maurerus *(n)* relates to this ſubject.

An illuſtrious man, after a wound receiv'd in the region of the liver, which did not penetrate, being ſeiz'd with a bilious tertian fever, and a jaundice, and after that with other diſorders, yet giving hopes of recovery, and in regard to the jaundice itſelf, being almoſt quite recover'd, but having a violent, repeated, and long uneaſineſs of mind come on, which a ſudden inflammation of the fauces and lungs ſucceeded, not without "fears, and anxieties, about ap-"proaching death," really underwent this change, in the ſpace of three days. And he had, to omit other things, within the cyſt, three calculi of a conſiderable ſize, but "the orifice of the ductus choledocus, and the whole "of this canal, was ſo far obliterated, or conſtricted, that it would not al-"low the leaſt probe, or bodkin, to paſs, and much leſs any drops of bile."

(i) N. 10.
(k) Vid. in adnot. a Cathar. Zeno additis vitam hujus Mauroceni ab Nic. Craſſo ſcriptam.
(l) Monit. med. c. 9. f. 1.
(m) Tom. 8. obſ. 30.
(n) Ibid. obſ. 70.

There is no doubt but the cavity of this duct was ſo conſtricted, when the ſkin was yellow, and the inteſtinal fæces "were white," and diſcharg'd "ſlow-"ly and difficultly." But it certainly was no longer in that conſtricted ſtate, at the time when the ſkin was reſtor'd "to a quite natural and florid colour," and the fæces were diſcharg'd "in a great quantity, and ting'd as they natu-"rally are. It may, therefore, ſeem not abſurd to ſuppoſe that a ſpaſmodic conſtriction, which a quiet ſtate of the mind, and a proper regimen of cure, had lately relax'd, return'd, within thoſe three days, from new, commotions of that kind, together with the whole train of deadly ſymptoms.

But be this as it will, if you, in the mean time, acknowledge what I have ſaid of criſpatures, which are brought on by a ſpaſm, in conſequence of certain paſſions of the mind, or excited by irritations, and pains, of various parts *(o)*, but particularly of thoſe that are the moſt near to the liver; I ſay, if you acknowledge theſe things to agree with probability, and attend a little to what relates to irritations, you will, doubtleſs, find out the reaſon which you aſk'd of me *(p)*, why, ſuppoſing calculi in the gall-bladder, the jaundice may ſometimes ariſe, although there be no other cauſe, at the ſame time, of all thoſe which I mention'd above, from whence this diſorder could be accounted for.

This was formerly allow'd by me, when I ſaid *(q)* "whether the calculi "found by me, were not yet of that magnitude, or weight, or figure, by "which the cyſt could be much injur'd, or whether they were never driven "into ſuch a ſituation, as to have in their power to obſtruct the bile," it might have been for theſe reaſons, that in thoſe bodies, wherein I found them, "they had brought on no peculiar diſorder, or, at leaſt, none that was "evident, and indeed not ſo much as an icteric colour."

For I did not doubt, but if the cyſt were irritated, either by the magnitude, or the weight, or, in particular, by the figure of the calculi, and chiefly when they are forc'd into the ſtreights of the neck of the bladder, by the bile which they thus retain therein; and at the time when this cyſt is compreſs'd by the ſtomach, and inteſtines, forc'd on ſtill farther and farther, that a ſpaſm may then ariſe, with contractions, and criſpatures, which are propagated through the larger and continu'd ducts of the bile, on the one hand, to the inteſtinum duodenum, and on the other, to the liver: and I did not doubt but that the paſſages being thus contracted, a jaundice might be form'd, in the manner afterwards particularly explain'd by Hoffmann *(r)*. Therefore the jaundice, as it can then only be the conſequence of gall-ſtones, and as what theſe then do by irritating, may be done, at other times, by different cauſes in different ſituations, and even by the paſſions of the mind themſelves, this will, therefore, not be the conſtant, and proper, ſign of theſe cyſtic concretions.

36. And if the jaundice is not a conſtant ſign, is there any other that is perpetual, and peculiar? I very much fear leſt that, which was the caſe in the time of Fernelius *(s)*, is alſo the caſe at preſent, and will be ſo, for the future; I mean that "no manifeſt marks, by which the exiſtence of theſe "ſtones may, certainly, and eaſily be known," can be found out, but that

(o) Supra n. 10.
(p) N. 33.
(q) Epiſt. anat. I. n. 50.
(r) C. 3. ſupra ad n. 15. cit. §. 19. & p. 4. f. 12. c. 12. §. 10.
(s) C. 5. ſupra ad n. 13 & 27. cit.

we

we muſt dwell upon "ſuſpicions" only, as we have ſeen of the jaundice. It does not, however, eſcape me, that there have been celebrated men, both among the ancients, and moderns, who have attended to theſe marks with a very laudable induſtry, and have endeavour'd to approve them to every one.

For, in the firſt place, I ſee that Coiterus (*t*), has publiſh'd ſome obſervations of his own, of theſe calculi, with an intention "that therefrom might "be learn'd the ſymptoms, which are the conſequences of this diſorder." But theſe are reduc'd to a long-continu'd jaundice, and in one, wherein even the common canal was obſtructed, to a continual vomiting of food. In regard to the firſt of which I have ſaid enough already. And in regard to the ſecond, which is likewiſe taken notice of by others, how often it is abſent, and by how many, and how various cauſes, beſides this, it may be brought on, is certainly manifeſt to every one.

Others have ſince added different ſymptoms, the conſideration of which I ſhall not particularly proſecute, as it naturally appears, that the ſame thing muſt be ſaid of colic pains, and other ſymptoms of that kind, which I have already ſaid of vomiting. And what ſhall we ſay, when we ſee ſuch ſymptoms advanc'd, as are diametrically oppoſite to each other, as for inſtance, thoſe of coſtiveneſs, and laxity of the inteſtines? Nor does it affect me, to find it aſſerted in the Sepulchretum (*u*), that "it is ſcarcely poſſible to conceive" of this latter ſymptom taking place: for it is very clear to me, that when the veſicle is entirely fill'd up by a calculus, all the bile muſt, of courſe, flow continually to the inteſtines, and if it be acrid in any conſiderable degree, muſt, of courſe, ſtimulate them pretty ſtrongly. But I only remark this circumſtance, that if ſometimes one, and ſometimes the other, is true, which I do not doubt, neither of them, conſequently, can be the perpetual, and peculiar ſymptom, of theſe calculi.

37. But if we omit theſe ſymptoms which are common to other diſorders, and enquire what the calculus can of itſelf effect, we ſhall come back nearly to thoſe things, which, as I have juſt now taken notice (*x*), have been already ſaid by me in the firſt anatomical epiſtle. "The calculus, of itſelf," as Boerhaave alſo ſays (*y*), "while it remains quiet, produces no diſagreeable ſymp-"tom, except a ſenſe of weight, but irritates by its bulk, its weight, and "its roughneſs." If we transfer theſe things, which he ſays of the urinary bladder, to the gall-bladder, do you ſuppoſe that this calculus, which is lighter than that of the urinary bladder, and is gradually increas'd, will diſcover itſelf to exiſt by a ſenſe of weight? We muſt wait a long time then, till it, at length, acquires a greater weight. But will the ſign, which we ſhall be in want of ſo long, and in moſt caſes always, be then, at length, ſenſible at leaſt, and plac'd beyond a doubt. It was certainly ſenſible in the noble count of whom Hildanus ſpeaks (*z*), ſince, "for many years, as often as "he turn'd himſelf from one ſide to the other in bed, he could perceive a "great, and troubleſome weight, oppoſite to the liver, that fell from one "ſide to the other."

(*t*) Obſ. anat.
(*u*) L. 3. ſ. 10. additam. in ſchol. ad obſ. 1.
(*x*) N. 35.
(*y*) Prælect. ad inſtit §. 790.
(*z*) Obſ. ſupra cit. ad n. 22.

But the calculi, contain'd in his gall-bladder, were ſo large as to weigh eighteen drachms and a half, and that when in a dried ſtate, for when recent from the body, they were much heavier. But do you ſuppoſe theſe to have been heavier than that great number of calculi, which were found, at one time, by Greiſelius *(a)*, all of which, taken together, weigh'd thirty drachms? For he has not remark'd that the man, in whoſe body he found them, had ever perceiv'd any weight therefrom.

Yet perhaps you will ſay, that the vaſt quantity of fat, which was found in his belly, might poſſibly obtund this ſenſation. Were all the bodies extremely fat then, in which theſe calculi have been found to a conſiderable weight? At leaſt the woman *(b)*, in whom the calculi were equal to the weight of twenty-four drachms, does not ſeem to have been very fat, nor yet the prieſt *(c)*, whoſe calculi weigh'd twenty drachms, nor the illuſtrious man *(d)*, in whom they weigh'd almoſt as much. Yet we read of none of theſe, what Hildanus aſſerts of the count, when he turn'd himſelf in bed, nor do I ever remember to have read the ſame of any perſon, whoſe gall-bladder was loaded with calculi. To this caſe of the count, I ſhould ſuppoſe, from comparing the times together, Stieberus *(e)* refer'd, when to an obſervation of that kind, he objected another "of more than two hundred ſtones," in the gall-bladder of a man, "who had never made any complaint of an oppreſſive pain "in the right ſide."

But ſuppoſe that many have complain'd of that ſame ſenſation, of which the count above-mention'd complain'd. Yet at the ſame time call to mind thoſe ſacculi, which hung from the liver, and were loaded with calculi *(f)*, or call to mind even the gall-bladder itſelf, which has been found more than once to be diſtended with a large quantity of thick bile, to a ſurprizing degree. You will, by this reflexion, clearly perceive, that the ſame ſenſation may ſometimes ariſe from other cauſes, beſides calculi, or if it ariſes from calculi, not only from thoſe which the gall-bladder contains. And it is manifeſt from theſe, and other examples, that even the diſtention, which not only the patient, but the phyſician, alſo, by applying his hand to the part, perceives, and, conſequently, the effect of the bulk of calculi, affords but an ambiguous mark of their exiſtence.

The roughneſs remains. Of which I ſay firſt, as I have already ſaid of the weight, and might have ſaid of the bulk, that it is not always ſuch as can irritate, and diſcover itſelf by irritation. And, in the ſecond place, I ſay, that even when it is of ſuch a kind, the veſicle is, at one time, defended by the quantity, and at another time by the thickneſs of the bile, from the irritation it has a tendency to create; for that happens very rarely here, which happens almoſt always in the urinary bladder, that all the contain'd humour being diſcharg'd, nothing remains but the calculus, by which the bladder is prick'd, and ſtimulated, eſpecially as the gall-bladder cannot contract itſelf like the other, and cloſely embrace the ſtone: and although this could hap-

(a) Obſ. ſupra cit. ad n. 19.
(b) Eph. n. c. dec. 3. a 7 & 8. obſ. 123.
(c) Act. n. c. tom. 5. obſ. 129.
(d) Commerc. litter. a. 1742. hebd. 28. n. 1.
(e) Sepulchr. l. 3. ſ. 17. obſ. 14. §. 3. cum ſchol.
(f) Vid. ſupra n. 13.

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pen, yet the ſenſe of both bladders does not ſeem equally exquiſite; and this I ſay, leſt you ſhould have recourſe to the turgeſcency of the ſtomach, and inteſtines, which, however, does not always ſubſiſt, in order to make us conceive how the cyſt may be preſs'd cloſe upon the calculus.

Finally, I ſay that in theſe very viſcera, in the part where they can preſs upon the contiguous veſicle, that ſame ſenſe of pricking may happen to exiſt from another cauſe, which would be, in the gall-bladder, from a calculus; and even that it may be in this veſicle itſelf, from the very acrid quality of retained bile, or from ſome ſpaſm; ſo that irritations may be either ſuppos'd to exiſt in this receptacle, which are not there, or thoſe which are there, may ariſe from a cauſe quite different from calculi.

38. What I have ſaid on both ſides of the queſtion then, hitherto, goes ſo far as to give you to underſtand, that there is no perpetual, no peculiar, ſign of theſe calculi. But leſt you ſhould chance to ſuſpect, that there may be ſome fallacy in reaſoning, as there often is, let us confine ourſelves to experience. I ſet aſide all my own obſervations, and thoſe of Valſalva (*g*), in none of which there was any ſign of thoſe calculi, that we, nevertheleſs, found in the gall-bladder. I alſo ſet aſide thoſe which I have produc'd in a former work (*h*), from Gerbeſius, and Loſpicklerus, who aſſert of men troubled with calculi of the gall-bladder, "that they had liv'd a long time in health, "and had been free from complaints."

But if others teſtify the ſame thing beſides, is it but juſt that you ſhould call to mind, all thoſe obſervations which we now ſet aſide. Rolfinc (*i*), therefore, a phyſician of great eminence in his times, when he deſcribes what kind of calculi he found in the cyſt, ſays, in general, "that ſtones of the gall-"bladder very often lie latent in that cyſt, for ſome years, without doing any "injury, ſometimes bringing on pain, and ſometimes being without. L'Emery the father (*k*), affirms it to be well known, that theſe ſtones not only do not cauſe death, but even "frequently cauſe no inconvenience whatever." And I have already ſaid above (*l*), that Vaterus had obſerv'd in a woman, who had thirty of them in the gall-bladder, a long-continu'd, and "perfect "health," even to the end of her life.

Galeati (*m*), in like manner, affirms, that in a woman, whoſe body he diſſected, "nothing had happen'd, either in the diſeaſe whereof ſhe died," (which was a dropſy) "nor before that time, as far as he could learn, that "ſhow'd the gall-bladder to be affected;" yet in this veſicle, nevertheleſs, were four calculi, the largeſt of which "being angular, had obſtructed the ori-"fice of the cyſtic canal." Themelius (*n*), alſo, when he takes notice of "ſome "biliary calculi, worthy of remark," that were found by him, in the cyſt of a ſtrumpet, expreſsly ſays, "that they had not been attended with any injury "to health."

Finally, Roncallus (*o*), for I am not willing to mention any more here, than naturally occur to me as I write; gives an account of ſeven calculi, of

(*g*) Vid. ſupra n. 27.
(*h*) Epiſt. anat. 1. n. 51.
(*i*) Diſſert. de gutta ſer. corollar. 4.
(*k*) Hiſt. de l'acad. r. des ſc. a. 1703. obſ. anat. 1.
(*l*) N. 32.
(*m*) Cit. ſupra ad n. 21.
(*n*) Act. n. c. tom. 5. obſ. 10. prop. fin.
(*o*) In epiſt. addit. ad hiſt. morbor.

the ſize of a ſmall walnut, being found, by him, in the gall-bladder of a woman, who died in the eighth month of her pregnancy, and who, in the whole of that time, and long before, " had been endow'd with a very good habit " of body, was well nouriſh'd, and had a good colour ;" ſo that it was manifeſt, unleſs theſe concretions had been form'd in an inſtant of time, which cannot be ſuppos'd, " that health may continue," even when theſe are preſent.

If am not by any means deceiv'd then, it is ſufficiently demonſtrated, that there is no perpetual ſign of cyſtic calculi, and, conſequently, that there is none proper, and peculiar.

39. How is it then, you will ſay, that Wepfer (*p*), a very experienc'd phyſician, has written theſe things to Verzaſcha: " I do not think that the " neck of the gall-bladder is ſtop'd up, becauſe there is not the leaſt " complaint of a cardialgia, or pain with tenſion, near to the cartilago enſifor- " mis, the ſeat of which might be cover'd with a ſilver penny ?" Did not he, at leaſt, think this an inſeparable ſign, where the calculus had ſtop'd up the neck of the gall-bladder ?

But I would have you attend to this, that he has not made mention of calculi in particular, and that there are other cauſes beſides a calculus (*q*), which are capable of obſtructing the cyſtic duct, as well as the other biliary ducts. And in the ſecond place, even when a calculus obſtructed this duct, Galeati, as was juſt now ſaid, did not only not obſerve a jaundice, which alone was found to be abſent, at that time, by Bezoldus (*r*), and was prov'd to be ſo, in many caſes, by Pechlinus (*s*), but even remark'd that nothing was the conſequence of it which could ſhow the cyſt to be affected: and the ſame remarks, nearly, were made by Reverhorſt (*t*): and by Phil. Jac. Hartmann (*u*), in two bodies: nor has Haller (*x*) any thing contradictory thereto, in the diſſection of three bodies: nor, finally, he who could have related with accuracy all the ſymptoms of a patient, I mean the celebrated Trew (*y*).

And although Tacconus (*z*) ſays, that very great pains, in the hypogaſtric region, had been join'd with a quartan fever, yet he not only ſays, that the jaundice had not attended, at the ſame time, but even that there had not been thoſe pains which reach to the cartilago enſiformis, as he had expreſsly ſignified, in another woman, a little before, where he ſuppos'd the exiſtence of calculi, in the ductus communis. You ſee therefore, that not even when the meatus cyſticus is obſtructed by a calculus, as it was in all the bodies I have refer'd to, is that pain, which has been deſcrib'd by Wepfer, a conſtant and perpetual ſign of its exiſtence.

40. And although our original enquiry, here, was after the ſymptoms of a calculus, not only when thruſt down into that paſſage, but, in general, when exiſting in the gall-bladder, yet it will not repent me, that I have examin'd whether the ſign deſcrib'd by Wepfer, be proper to a calculus, that is fallen

(*p*) Sepulchr. l. 3. ſ. 17. in ſchol. ad obſ. 6. in additam.
(*q*) Vid. ſupra n. 33 & 34.
(*r*) Diſſ. de colelitho caſ. 1. n. 6.
(*s*) Vid. act. erud. Lipſ. a. 1691. m. maj. in recenſ. l. ejus 1. obſ. 58.
(*t*) Diſſ. de mot. bil. §. 57.
(*u*) Eph. n. c. dec. 2. a. 5. obſ. 72 & 77.
(*x*) Opuſc. pathol. obſ. 33. hiſt. 4. 13. 14.
(*y*) Commerc. litter. a. 1743. hebd. 32. n. 3.
(*z*) Cit. ſupra ad n. 16.

down

down into the ductus communis, ſince it cannot be proper to that which remains in the veſicle, as was ſufficiently demonſtrated above (*a*), when I treated ſlightly of the ſenſe of diſtention. For as to an obſervation occurring in the Sepulchretum (*b*), to which this title is prefix'd, " a pain about the car- " tilago enſiformis, from calculi in the ſtomach, and gall-bladder;" take care how you ſuppoſe that the obſervation correſponds with the title: for in reading over the caſe, you will find, indeed, that many calculi adher'd very cloſely to the fundus, and ſubſtance, of the ſtomach; but that there was any calculus in the gall-bladder, or in any other part, you will not find.

From this obſervation, therefore, you will rather learn, that it was not a proper ſymptom of calculi exiſting in the ductus communis, which ſhow'd calculi to be adhering to the ſtomach. And, indeed, if beſides theſe, others had alſo exiſted in the ductus communis, yet there would be room for doubt, to which of theſe two kinds, this pain ought to be aſcrib'd, juſt as when in a hiſtory of the ſame kind of pain, calculi are deſcrib'd in that duct, and the liver is ſaid, at the ſame time, to be almoſt full of deprav'd matter, and to have very conſiderable diſorders, and in another, many tumours are ſaid to have exiſted throughout the liver, and this meatus to have been much compreſs'd by one of them: although, if the compreſſion, or obſtruction, of the ductus communis be ſuppos'd, of itſelf, to bring on the cauſe of that pain, whereof I ſpeak; it, of courſe, cannot be conſider'd as the peculiar mark of ſtones ſticking therein, as it is ſufficiently ſhewn above (*c*), that this canal may be both compreſs'd, and obſtructed, without calculi, and as nothing forbids us to imagine, that bile may be ſometimes confin'd therein, in a very great quantity, and that it is ſometimes naturally ſo acrid, or becomes ſo by ſtagnation, that it has a power to diſtend, and to ſtimulate, the canal in the ſame manner with calculi.

Do not imagine, however, that the induſtry and ſkill of thoſe who enquire after truth, and endeavour to increaſe medical knowledge, are leſs eſteem'd by me, than by the celebrated man, who proves the explication of the pain in queſtion, by the firm connection of the ligamentum ſuſpenſorium of the liver, to the peritonæum, where it covers the enſiform cartilage: but influenc'd by the ſame love of, and deſire after, truth, that influence me at preſent, he ſoon after ſubjoins the following words: " and not in calculous " affections of the liver only, but in inflammations, or other tumours of the " ſame viſcus, which have their ſeats not far from the roots of this ligament, " theſe things are proper to explain the various ſymptoms of this kind, that " ariſe from thence, and, particularly, the pain of the cartilago mucronata, " of which we ſpeak, and which, in ſimilar circumſtances, is frequently " found to attend inflammations of the liver."

41. And this ſymptom is not only common to other diſorders that are taken notice of, whether they be ſeated on the outſide of the liver, or within the liver, or in the ductus communis itſelf, but does not always occur, even at the time when there are ſtones in this duct. For all biliary calculi, whatever, that are diſcharg'd from the inteſtines, muſt, of neceſſity, have paſs'd through the ſtreights of this duct to the inteſtines: and yet, notwithſtanding

(*a*) N. 37.
(*b*) L. 3. ſ. 7. obſ. 32.
(*c*) N. 10 & 34.

ſo

ſo many obſervations are extant, of ſtones of this kind being diſcharg'd with the ſtools, how few are there in which we read, that a pain at the cartilago enſiformis had preceded the diſcharge?

It does not, however, eſcape me, that all the ſtones, thus diſcharg'd, are not to be ſuppos'd to have come from the liver. And, indeed, I readily confeſs, that although from the time in which they firſt began to be obſerv'd, which was before Galen *(d)*, to this very time, almoſt innumerable obſervations of theſe concretions have been collected by Donatus *(e)*, by Schenck *(f)*, by Rhodius *(g)*, by Schrockius the father *(h)*, and by others, it ſeems to me that many of them have been generated in the inteſtines, or the ſtomach, itſelf.

For that they may, alſo, be generated in the ſtomach, ancient examples prove, the firſt of which is related by Donatus *(i)*, when my fellow-citizen. "Mr. Jo. Juliani, of Forli, ſent a ſtone to Gentilis, which was thrown up "by vomiting, equal to the ſize of a nut, after a pain of the ſtomach, which "in its hardneſs exceeded that of gypſum, and was, in its ſhape, like that of "an egg:" and one ſimilar to this, except that it did not exceed the ſize of a jubeb, was of a whitiſh colour, and not furniſh'd with evident ſtrata, I formerly ſaw in the place of my nativity, which a woman had thrown up by vomiting, in like manner, after long-continu'd pains of the ſtomach.

But though others have lately thought that they have prov'd them to be generated in the inteſtines, by examples which, perhaps, are not very proper for the purpoſe, to me that ſeems more ſuitable to the preſent occaſion, which you will find in Ballonius *(k)*, "of a ſtone in the inteſtines, which was "perforated ſo as to ſuffer the more liquid matter to paſs through it;" for it ſeems to have been form'd, by degrees, of earthy, and viſcid, particles adhering, round about, to the inteſtines: the other particles paſſing through the middle of it, and keeping the paſſage open.

Who will venture to deny, that ſtones which are the largeſt of all, and univerſally made up of one, and the ſame, matter of this kind, had not their firſt beginning in the inteſtines, as they certainly had their increaſe? And indeed although I read that ſome were of ſuch a kind, either in their magnitude, or colour, or their figure, that any one might eaſily refer them to the claſs of cyſtic concretions, as, for inſtance *(l)*, thoſe which were "at one "time ſmaller, and at another time larger, than peas," or "than filberts, "thoſe which were of a yellow colour," or "in great part yellow," thoſe which were "triangular," or otherwiſe "angular;" and, finally, to comprehend many examples in one, "thoſe which in their ſhape, colour, and magnitude, "were like to the ſeeds of melons;" yet I will readily omit all theſe, eſpecially as the ſymptoms which had preceded, are either not related with the neceſſary accuracy, or not related at all.

I will go on to thoſe which the authors who deſcribe them, or other men of eminence, have conſider'd, and not without reaſon, as cyſtic, or, at leaſt,

(*d*) Vid. apud Schenck. obſ. med. l. 3. ubi de inteſtin. lapid. obſ. 1.
(*e*) Cap. ſupra ad n. 15. cit.
(*f*) Obſ. 1. modo cit.
(*g*) Cent. 2. obſ. med. 74.
(*h*) Obſ. ſupra ad n. 24. cit.
(*i*) Cap. modo cit.
(*k*) L. 2. conſil. med. 24.
(*l*) Vid. apud Schenck. obſ. 1. modo cit.

biliary

biliary concretions. But Fernelius, whom I have mention'd in a former work (*m*), ſays no more than that he had found " after a long jaundice, ſuc- " ceeded by a diarrhœa, innumerable calculi of this nature, like peas, or " barley-corns, to be diſcharg'd by moſt perſons." Coiterus, in like manner (*n*), ſays that he knew a woman, " who was freed from a very trouble- " ſome, and long-continu'd jaundice, by a diſcharge of a calculus with her " ſtools." That Solomon Alberti, " had often obſerv'd calculi to be diſ- " charg'd with the fæces, after a very long jaundice," I know very well from the celebrated Haller (*o*): but whether he ſaid more than this I know not, inaſmuch as I have not his ſecond " oration," which he there quotes; not that which is among the three publiſh'd in the year 1585, but that which is with the four publiſh'd in 1590, for that that is what he refers to, I do not doubt, as I ſee it is entitled in Linden (*p*), *de felle ad inteſtina reſtagnante*, &c.

I have ſaid above (*), that Malpighi has aſſerted a ſtone to be diſcharg'd by a matron, " after great pains and a long jaundice." That Ruyſch (*q*) preſerv'd " a calculus, which came from the gall-bladder, and was diſcharg'd " *per anum*," I have read, but not what ſymptoms had preceded the diſcharge. And others I purpoſely omit, who have either ſaid no more than Ruyſch, of what had preceded, or have not mention'd ſo many ſymptoms as Malpighi.

42. It is better, therefore, to paſs over to thoſe who have made mention of the ſeat of the pain which preceded. Hoffmann the father, as the ſon relates (*r*), has ſaid that there had been " very acute pains of the right hypo- " chondrium." Dillenius (*s*), that after pains which had, " for a very long " time," occupied the ſame hypochondrium, " colico-nephritic pains had " ſucceeded." Bartholin (*t*), from the obſervation of Tinctorius, " that " there had been many complaints of a pain in the right ſide, which ex- " tended to the inteſtines." Lentilius (*u*), " a very great pain about the re- " gion of the liver, with a tumour; of which pain, however, the patient had " already complain'd, for the ſpace of ten years." Wolfstrigelius (*x*), who has ſpoken more fully on the ſubject than the others, that pains had, at ſeveveral times, preceded, " which reſembled colico-nephritic pains, and which, " though they frequently grew milder, yet as often return'd with violence:" that upon a relapſe into this diſeaſe, as frequently happens, " there was a pain " of the loins, and a rending pain about the right hypochondrium, at the " place where the ductus choledocus is inſerted into the duodenum:" that the diſeaſe returning again, " there was a pain which, indeed, rather reſembled " a colic pain, as it was not felt about the loins, and right hypochondrium, " but chiefly towards the navel."

In fine, our Valiſneri (*y*), who proſecuted every inquiry, himſelf, with accuracy, having obſerv'd ſimilar caſes, firſt in the place of his nativity, and after that here at Padua alſo, has ſaid nothing more in regard to pains, than

(*m*) Adverſ. 3. animad. 28.
(*n*) Obſ. anat.
(*o*) Ad Boerhaav. prælect. §. 348. not. (m).
(*p*) Renovat. de ſcript. med. l. 1.
(*) N. 23.
(*q*) Præf. ad theſ. animal. 1.
(*r*) Medic. rat. t. 4. p. 2. ſ. 2. c. 3. in fin.
(*s*) Eph. n. c. dec. 3. a. 9. obſ. 246.
(*t*) Cent. 4. hiſt. anat. 49.
(*u*) Eph. n. c. dec. 2. a. 7. obſ. 136.
(*x*) Earund. dec. 1. a. 2. obſ. 89.
(*y*) Epiſt. ſupra ad n. 13. cit.

" that

" that they had been very violent in the region of the liver, and had ex-
" tended themſelves towards the navel." The caſes propos'd by Vaterus (*z*), and ſtill more by Bezoldus (*a*), I purpoſely paſs over, on account of the magnitude of the calculi, which, though they certainly had their beginning in the gall-bladder, yet, as they might ſeem to have receiv'd their increaſe in the inteſtines, ſhould have been then ſaid to have come from thence, rather than from the common biliary canal. And Vaterus ſays that there had been " ve-
" ry violent, and excruciating pains of the belly, which firſt occupied the
" region of the navel, and at length ſettled in the lumbar region." And Bezoldus, that after the patients " having been ſurprizingly harraſs'd for ſix
" years and more, with pains of the right hypochondrium," a ſtone was at length diſcharg'd by the inteſtines, but " not without griping pains." You ſee then, that in all theſe obſervations, no pain is taken notice of, which had its ſeat about the enſiform cartilage.

No. is any thing hinted in regard to ſuch a pain, by the two Hoffmanns, Maurice, and Frederic. For the former (*b*), though it is true he mentions
" the anterior parts," yet mentions them in ſuch a manner, as to ſay that there had been " a long-continu'd vellicating pain, with tenſion, under the right
" hypochondrium, which was troubleſome towards the anterior parts." And although the latter (*c*), beſides " an intolerable pain in the right ſide, and un-
" der the falſe ribs," adds the following words; " about the ſcrobiculus cor-
" dis was a violent oppreſſive pain, which even extended itſelf into the um-
" bilical region;" yet the ſcrobiculus cordis does not comprehend the enſiform cartilage, or if you would have it comprehended in theſe words, you muſt then call to mind, that in this obſervation, the queſtion is not of a
" calculus," but of " bilious ſordes ſtopping up the ductus choledocus;" ſo that by this means thoſe things might rather be confirm'd, which I have advanc'd above (*d*), in regard to the ambiguity that muſt be the conſequence of this ſymptom, which is certainly, alſo, the conſequence of other ſymptoms, in the next obſervation of Hoffmann (*e*).

However, in the laſt (*f*), where the queſtion is of calculi obſtructing that duct, he mentions " an acute, and almoſt intolerable pain, deeply fix'd in the
" region of the liver, with pains of the inteſtines, which were troubleſome
" now and then, and remitted at intervals." Finally, turn to thoſe things that are written by the very ſkilful archiater Van Swieten (*g*), where he tells us what he has obſerv'd to happen at this time; you will find not a word of pain at the enſiform cartilage. And as upon duly conſidering all the obſervations that I have produc'd, you will obſerve that the pain was never extended to that cartilage, but to the navel, or the umbilical region, more than once, if you ſhould happen to prefer taking the explication, not from the inteſtinum jejunum, into which the duodenum is continu'd, but from that part of the ligamentum ſuſpenſorium of the liver which is better known to Euſtachius (*h*), than to Reverhorſt (*i*), and accompanies the umbilical

(*z*) Diſſert. qua obſ. rariſſ. calcul. obſ. 3.
(*a*) Diſſ. de colelitho caſ. 2.
(*b*) Eph. n. c. dec. 2. a. 7. obſer. 244.
(*c*) Paulo ante cit. capite 3. obſ. 4.
(*d*) N. 40.
(*e*) C. cod. 3. obſ. 5.
(*f*) Ibid. obſ. 6.
(*g*) Comment. ſupra ad n. 15. cit. §. 950.
(*h*) Tab. anat. 2. fig. 3 & 4.
(*i*) Diſſ. de motu bilis. fig. 1.

ligament,

ligament, or even from this ligament itſelf, you are at the ſame freedom to do it for me, as from the other part of the ligamentum ſuſpenſorium, when the pain ſhall, at any time, extend itſelf to the enſiform cartilage, as has been obſerv'd by others.

43. If, therefore, biliary calculi, as has been demonſtrated hitherto, and will be confirm'd preſently (*k*), do not diſcover themſelves, by any conſtant, and peculiar ſymptoms, even when they are ſo far from being in a ſtate of reſt, that they are endeavouring to procure a diſcharge for themſelves, how much leſs will they be able to do that, when they are in a perfect ſtate of reſt, in their veſicle?

But you will ſay that the ſymptoms of calculi, inherent in the kidnies, and urinary bladder, alſo, are very frequently ambiguous, and yet not held in contempt by phyſicians, in ſo great an obſcurity of things. Nor do I deſpiſe the ſymptoms that have been advanc'd, as marks of the exiſtence of cyſtic calculi; but I complain (*l*) that they are more proper to make us ſuſpect their exiſtence, than to convince us that they actually do exiſt. Yet if we are to inſiſt upon ſuſpicions, I not only commend thoſe who endeavour to add ſome weight to theſe ſuſpicions, by increaſing the number of the ſymptoms, but, amongſt them, I alſo take the liberty to mention myſelf.

Therefore, although I know that ſtones of the cyſt are not always join'd with bile, which reſembles ſordes, nor always with urinary calculi, yet I believe that the ſuſpicion of Sylvius, which you even have in the Sepulchretum (*m*), is not altogether to be deſpis'd, who fears leſt thoſe that vomit bile of this kind, ſhould have concretions in the gall-bladder; and that another ſuſpicion of my own ought not to be concealed. For I having, beſides thoſe that I formerly mention'd (*n*), as ſeen by me, ſeen others alſo, and read of others, that have been ſubject to bilious, and urinary calculi, at the ſame time: and as in turning over the obſervations, which I have in part made uſe of in this letter, I met with a great number likewiſe; I eaſily perceiv'd that theſe things did not happen by chance. Of thoſe who I have read were thus affected, I will not omit one, who deſerves to be taken notice of, in preference to the reſt, on account of his merits in the medical faculty, I mean Michael Mercati (*o*). This gentleman having died of nephritic tortures, and having two ſtones, of a conſiderable ſize, ſticking in his ureters, and in his kidnies ſixty-three, which were all pretty ſmall, or ſome of them only, as his preceptor Cæſalpinus has written, large, had, alſo, in his gall-bladder (although, as they take notice, he had never been attack'd with the jaundice) ſix and thirty of an obſcure colour, angular in their figure, and of the bigneſs of a vetch.

And who is there, that; reading theſe things of Mercati, and in that great number of obſervations moreover, that the biſhop, mention'd by Lælius a Fonte (*p*), was wont frequently to labour under the ſtone of the kidnies, that the count of Hoechſtetter (*q*) had a ſtone, and ſabulous formations therein, that the cooper of Wepfer (*r*) had a ſmall ſtone,

(*k*) N. 44. & ſeq.
(*l*) Vid. n. 36.
(*m*) L. 3. ſ. 18. obſ. 9.
(*n*) Epiſt. anat. 1. n. 48.
(*o*) Vid. ejus vitam & teſtimonia, metallothecæ ejuſd. Vaticanæ præfixa.
(*p*) Conſ. cit. ſupra ad n. 31.
(*q*) Caſ. cit. ſupra ad n. 17.
(*r*) Hiſt. cit. ſupra ad n. 20.

in a papillary caruncle of one kidney, that the woman of Borrichius (*s*) had diſcharg'd calculi from both bladders, that another of Morton (*t*) had one kidney fill'd therewith, that the old man of Reverhorſt (*u*) had the ſame in his kidnies, and urinary bladder; will not ſuſpect the cauſes to be ſimilar?

And leſt you ſhould be inclin'd to ſuppoſe that this happen'd only in old perſons, take notice, I beg of you, that a virgin of eighteen years of age, ſpoken of by Bonetus (*x*), had a ſtone taken from her by the lithotomiſt, of the bigneſs of a gooſe's egg: add to this that Bergerus (*y*) had found calculi in both the bladders of a counſellor at law; Lanciſi (*z*), alſo, in the kidney of that excellent man Horatio Albani, both a large ſtone, and many ſmall ones; and, finally, that Hoffmann (*a*) found one, which was not ſmall in its ſize, in the kidney of a gentleman, and one much larger in the urinary bladder.

For I ſhall, deſignedly, take no notice of a great number of other authors, and among theſe Jo. Bapt. Contulus (*b*), Chriſtophor. Cunradus (*c*), Vitus Riedlinus (*d*), Tob. Ferd. Pauli (*e*), Jo. Caſpar. Grimmius (*f*), Jo. Sebaſtian Albrechtus (*g*), Jo. Jacob. Trelyngius (*h*), Chriſtoph. Jac. Trew (*i*), who obſerv'd the ſame in two bodies, Jo. Storck (*k*), and Iſr. Cregutus (*l*): theſe, I ſay, and others (*m*), I ſhall omit; ſince beſides Baglivi (*n*), who ſo far conſiders this as what generally happens, that he has enquir'd into the reaſon, "why, when there are calculi in the gall-bladder, they alſo are generated in "the urinary bladder, and vice verſa," the teſtimony of Abraham Vater alone (*o*) may paſs for many, who expreſsly affirms, "that calculi have, "beyond a doubt, been very frequently obſerv'd in the gall-bladder, in thoſe "who have, at the ſame time, labour'd under a calculus of the urinary "paſſages."

Who then can read ſuch teſtimonies, and attend to ſo many ſimilar caſes, without immediately conceiving with Vaterus, "that the cauſes" of both ſpecies of calculi are, in a great meaſure, "evidently common to each other?" And if you take this for granted, you will, doubtleſs, begin to think with me, that when to the other marks of bilious calculi, this alſo ſhall be added, that the patient is ſubject to calculi of the urinary paſſages, ſome weight will be given to the other ſuſpicions; eſpecially if, according to what has been obſerv'd above (*p*), this patient is neither an infant, nor a child, but is already in a middle age, or advanc'd in life: which remark, drawn from the age of the patient, may, if join'd with others, help us to diſtinguiſh inteſtinal calculi, that have been diſcharg'd by ſtool, from ſuch as are generated in the liver.

Thus the celebrated Carlius (*q*), when he had not believ'd that a certain

(*s*) Vid. Bartholin. act. Hafn. vol. 5. obſ. 65.
(*t*) Phthiſiolog. l. 3. c. 14. hiſt. 5.
(*u*) Diſſ. ſupra ad n. 42. cit. §. 56.
(*x*) Sepulchr. l. 2. ſ. 4. obſ. 35.
(*y*) Phyſiolog. l. 1. c. 14.
(*z*) Oper. tom. 2. diſſ. 10.
(*a*) Cap. 3. ſupra ad n. 42. cit. obſ. 1.
(*b*) De lapid. c. 25.
(*c*) Eph. n. c. dec. 3. a. 9 & 10. in obſ. 171.
(*d*) Earund. cent. 3. obſ. 45.
(*e*) Earund. cent. 9. obſ. 76.
(*f*) Act. n. c. tom. 1. obſ. 20.
(*g*) Eorund. t. 4. obſ. 49,
(*h*) Eorund. t. 5. obſ. 129.
(*i*) Commerc. litter. a. 1734. hebd. 6. n. 5. & a. 1743. hebd. 32. n. 3.
(*k*) Commerc. litter. a. 1735. hebd. 52. n. 4.
(*l*) Diſſert. de calc. in corp. hum. generat. &c. §. 31. in fin.
(*m*) Vid. epiſt. 57. n. 12.
(*n*) De experim. circa bilem.
(*o*) Diſſ. cit. ſupra ad n. 16. theſ. 8.
(*p*) N. 15.
(*q*) Cemmerc. litter. a. 1731. ſpecimen. 51. n. 1.

calculus,

calculus, which was reckon'd among cyſtic calculi, and which had been diſcharg'd among the fæces, by a boy of eighteen years of age, did really belong to that claſs, for this reaſon "in particular, becauſe ſuch an age does "not naturally bring on a diſpoſition of that kind" (and it certainly does not, except very rarely, which is one point, wherein bilious, and urinary, calculi do not agree with each other) knew afterwards, that the liver of this young man, who had died of a dyſentery, was found to be as ſound as that of the moſt "healthy young animal can be:" whereas the calculus "of two ounces "and a half in weight," for ſuch it was, though it might have receiv'd the greater part of its increaſe in the inteſtines, would, at leaſt, have left ſome trace of its former reſidence, and paſſage, in the gall-bladder, and the ducts affix'd to the liver.

44. But although the marks of bilious calculi, which I have taken notice of, are, as appears from thoſe things that I have hitherto ſaid, as Hoffmann admoniſhes (*r*), "to be taken and conſider'd collectively:" and as all theſe marks cannot exiſt in all perſons, the greater part of them, at leaſt, and among theſe the principal are to be attended to (by the principal, I mean thoſe which are wont to be the more frequently obſerv'd, as, for inſtance, when ſtones deſcend into the ductus communis, there is certainly a pain ſeated on the right ſide, a jaundice, vomiting, anxiety, relapſe; for ſo I have in general obſerv'd, in many of thoſe obſervations that are pointed out above (*s*)) although, I ſay, we muſt proceed in the manner I have ſaid, yet we ought never to forget, how eaſily a deception may happen.

For if you compare with the greater part, or the principal of theſe marks, theſe two obſervations of Hoffmann, which I even refer'd to before (*t*), you will find that my ſurmiſes are not without foundation. And you will perceive the ſame thing, when, after having ſaid (*u*) "that there are ſome ſymp-"toms which prove the exiſtence of calculi, in the biliary ducts, that are "by no means fallacious," and enumerated the chief of them, he preſently (*x*) produces the ſigns of a very large calculus, ſticking in the gall-bladder; but eſpecially, when he deſcribes the ſymptoms (*y*) of a jaundice, which was not brought on by any calculus, but only by a ſpaſmodic "ſtricture."

Yet it not uncommonly happens, that as in urinary calculi, ſo in biliary alſo, we have a mark of their exiſtence which is much more to be depended upon than the others; I mean when any one of theſe concretions, or ſome fragment of them, at leaſt, is diſcharg'd. And as this very ſign, which is evident even from the natural light of reaſon, was mention'd by others before, and among theſe by Vaterus (*z*), but particularly, and fully, by Valliſneri (*a*), it may ſeem very ſurpriſing to any one, why it is omitted by Hoffmann, among thoſe ſigns that are "by no means fallacious;" eſpecially as, five years before, this very author had taught the following things (*b*),

(*r*) Cap. 3. ſupra ad, n. 43. cit. §. 15.
(*s*) N. 42.
(*t*) N. eod. id. eſt. obſ. 4 & 5.
(*u*) Ejuſd. tom. 4. p. 4. c. 12. §. 11.
(*x*) §. 17.
(*y*) Obſ. 1.
(*z*) Diſſ. ſupra ad n. 16. cit. theſ. 12.
(*a*) Epiſt. ſupra ad n. 13. cit. adnot 1.
(*b*) Tom. 4. paulo ante cit. p. 2. c. 3. §. 18.

" but among all theſe ſigns, which I have already admoniſh'd you of, there " is none more certain, whereby to judge of violent affections proceeding " from the biliary calculi, than the diſcharge thereof, together with the in- " teſtinal fæces; and then, juſt as it happens, in the caſe of renal calculi, " when they have been carried down from the ureters, into the bladder, all " the pains, together with the other violent affections, inſtantly and totally " ceaſe, and expire, at leaſt if you except the jaundice, which does not im- " mediately, but gradually diſappear."

When, therefore, the ſigns of calculi having intruded themſelves into the biliary ducts, and endeavouring to procure an exit for themſelves into the inteſtinum duodenum, have preceded; if among the fæces diſcharg'd from the inteſtines, which ought then to be carefully waſh'd by ſervants, and, according to the admonition of Valliſneri, paſs'd through a kind of ſieve, any biliary calculus be found, it is not to be doubted, but this ſign muſt throw ſuch a light upon the caſe, as could not be hop'd from ſo many other marks, that are, at beſt, but uncertain, and, in ſome meaſure, obſcure.

45. But there is need of caution, leſt we ſhould happen, at any time, to take an inteſtinal calculus for a biliary one, or, that all the ambiguity of words may be avoided here, for an hepatic calculus, that is a ſtone which is generated in the canals of the liver, or its appendage the gall-bladder.

There is a certain obſervation in Hoffmann (*c*), of twenty ſtones being diſcharg'd by vomiting; in regard to which, although he did not think it altogether incredible, that they ſhould have proceeded from the biliary ducts, he, nevertheleſs, rather ſuppos'd them " to have been generated from the ſucceſſive, and alternate, concretions of very viſcid, and earthy bile, in the flexure " of the inteſtinum duodenum itſelf:" for they were angular, and of a yellow colour inclining to green; and of ſuch a magnitude, that without excruciating pains in the right ſide of the belly, none of which had preceded, it did not ſeem poſſible for them to have paſs'd through the ductus communis.

Yet a jaundice had preceded the diſcharge of theſe ſtones, and " immedi- " ately" after this diſcharge, which ought to ſeem very aſtoniſhing to thoſe who attend to the exception of Hoffmann, juſt now mention'd (*d*), " was remov'd." If, therefore, as they prevented the paſſage of the bile into the duodenum by their obſtruction, ſo the bile either naturally, or by ſtagnation, was made acrid, or theſe calculi had very acute angles, you readily perceive, that not only a jaundice, but pains in the right ſide alſo, and other ſymptoms that are the conſequences of them, might have been previouſly caus'd by them, and even have been remov'd by their diſcharge.

But it is rather poſſible that theſe ſymptoms may be join'd together, than frequent: and no pains of the right ſide having preceded, in the obſervation in queſtion, might have render'd the phyſician ſufficiently cautious. The abſence of which, or of the jaundice, and ſtill more of both, ought in like manner to render him cautious, when calculi, which might otherwiſe ſeem to be cyſtic, are diſcharg'd from the inteſtines, as in thoſe examples that will be immediately pointed out. And firſt, three calculi occur to my mind

(*c*) Ibid. obſ. 2. (*d*) N. 44.

(*e*)

(e) (f) (g), that were diſcharg'd in the manner I have mention'd; of which, whether you attend to the globular, or oval figure, to the external, or internal colour, and ſome other circumſtances, you certainly will not be forward to deny that they might be cyſtic calculi, particularly if you call to mind that ſome very ſimilar have been, at times, found in the gall-bladder: yet when you read that there had been gripings and pains of the belly, but none in the right hypochondrium, and even that, in one inſtance, there were oppreſſive pains in the iliac region, you will believe that they were inteſtinal calculi, and that ſo much the more readily, as you will ſee that not a jaundice, but a volvulus, is taken notice of, in each of theſe three caſes.

Three other inſtances ſucceed. In regard to the firſt of which *(h)*, if it made any mention of the jaundice, and did not ſay that the ſtones were diſcharg'd "without any pains," their deſcription would ſo much the more incline us to take them for cyſtic calculi; as, in their ſize, they were by no means to be compar'd with thoſe that are mention'd in the three former, and in as many ſubſequent, examples. The ſecond of theſe *(i)* mentions colic pains indeed; but not in the right hypochondrium, nor join'd with a jaundice. For which reaſon I ſhould more readily ſuppoſe, with the obſerver of this inſtance, that the calculus, although furniſh'd with concentric ſhells, as the figure ſhows, and internally, and externally, yellow, had been generated in ſome inteſtine, pretty near to the entrance of the bile.

So in the third example *(k)*, I agree with the celebrated Albrechtus, who ſuppoſes the calculi to have been form'd in the inteſtinum colon; which calculi he, nevertheleſs, deſcribes, of a triangular figure, ſwimming in water, and inflammable: I agree, I ſay, not ſo much becauſe they contain'd, under an obſcure external yellowneſs, a very white matter which was, however, ſolid, "like pretty hard ſoap," as becauſe a violent pain was not wanting in the right hypochondrium. But, to take no notice of "the odour of impure lard," which proceeded from them in burning, and other circumſtances, I do not ſee that any thing is any where obſerv'd in relation to the jaundice.

Finally, out of the four examples which I, at preſent, chuſe to add, if the calculus which is ſo ſlightly mention'd by the celebrated God. Guil. Muller *(l)*, as to call it "bilious," and to repreſent it as being form'd of ſtrata, which inclos'd each other, could have been deſcrib'd more fully, and we could have known with what previous, or concomitant, ſymptoms it had been diſcharg'd, perhaps I ſhould admit it without any doubt: as I do certainly admit thoſe, that the celebrated Jo. Phil. Burggrave *(m)* deſcribes, as being diſcharg'd after violent, and thoſe returning, pains of the right hypochondrium, not without an icteric colour, both in the face and in the urine. And ſome that were ſeen by the celebrated Brunnerus *(n)*, although they were without a jaundice, we muſt, of courſe, admit for this reaſon, becauſe by diſſection, he found them already begun in the liver.

That is to ſay, a man having been troubled, almoſt ten years, with a con-

(e) Commerc. litter. a. 1740. hebd. 19. n. 2.
(f) Eph. n. c. dec. 3. a. 3. obſ. 21.
(g) Act. n. c. tom. 7. obſ. 100.
(h) Eorund. t. 3. obſ. 82.
(i) Eorund. t. 8. obſ. 121.
(k) Eorund. t. 3. obſ. 57.
(l) Eorund. t. 6. obſ. 69. circa medium.
(m) Eorund. t. 5. obſ. 78.
(n) Commerc. litter. a. 1738. hebd. 18. n. 1.

ſtant

ſtant pain of the belly, and particularly of the right hypochondrium, which at firſt was heavy, and obtuſe, though attended with tenſion, but afterwards, at times, became acute, and, at length, very ſevere, nor chang'd its ſituation from the right hypochondrium, ſo as to be at laſt intolerable, diſcharg'd light, and yellow calculi, which were of a lamellated ſtructure, and angular in their figure. This man dying after three days, had in his gall-bladder, which was enlarg'd, a maſs of a dark red colour, inclining to blue, and green, and ſoft in its conſiſtence; and in the middle of the cyſtic duct, and in the common duct, where it opens obliquely into the inteſtinum duodenum, a matter adher'd, which was ſomewhat leſs ſoft indeed, but, nevertheleſs, form'd by thoſe ducts, into two "oblong and rounded" globules: finally, in the colon were found fifteen calculi compacted into one globe, but eaſily ſeparable, and not yet ſo hard as thoſe which had been diſcharg'd by ſtool.

It could not, therefore, be denied that theſe had been begun in the biliary ducts; and that having become, by degrees, leſs ſoft, they were, at length, harden'd by their abode in the inteſtines. And if "through the whole of "the diſeaſe, no ſign of a jaundice manifeſted itſelf," either ſuppoſe that the matter was certainly more ſoft in the living body, than on the third day after death, when it was found in the ducts; and that therefore it not altogether obſtructed the diſcharge of the bile, and had, perhaps, created pains by its acrimony, more than by its obſtruction: or call to mind thoſe things which I have hinted above (*o*), in a ſingular caſe of this kind, in order to conceive, that even when the common duct is obſtructed, a jaundice may ſometimes be abſent. And in conſideration of this it was, I juſt now ſaid that the abſence of the jaundice, but ſtill more the abſence of both jaundice, and pain, on the right ſide, ought to render the phyſician cautious, and make him attend to all the other ſymptoms, united, before he pronounces any thing.

Wherefore, to ſubjoin the fourth example, I ſhall not very readily exclude from the number of hepatic calculi, thoſe which Fr. Slare (*p*) ſaw, and which were diſcharg'd by a noble woman, "who had been very much excruciated with "hepatic pains," at two different times, and in a few hours after the pain: for although in writing the caſe with brevity, as frequently happens, he has, perhaps, omitted what related to the jaundice, yet he has not omitted the odour of the calculi (that is when burnt) their colour, their taſte, agreeing with that of bile, and beſides theſe their lightneſs in water, and their inflammability. And I could wiſh that theſe two laſt-mention'd marks were either never at all obſerv'd in inteſtinal calculi, or at leaſt always in hepatic; it would certainly be much more eaſy for phyſicians to take care, leſt the one, as Matthiolus formerly fear'd (*q*), ſhould be taken for the other.

But it has been ſhown, that thoſe two ſigns, which moſt phyſicians made uſe of, with Reverhorſt (*r*), are frequently fallacious. And if Valliſneri admoniſh'd us to beware (*s*), leſt any calculi ſhould be haſtily thrown out from the number of hepatic calculi, for this reaſon, becauſe they neither

(*o*) N. 34.
(*p*) Vid. commerc. litt. a. 1735. hebd. 5. in adnot. ad n. 2.
(*q*) L. 5. epiſt. med. 3.
(*r*) Vid. ſupra n. 25. 26.
(*s*) Adnot. 1. cit. ſupra ad n. 44.

ſwam

ſwam in water, nor were inflammable; and this at a time when we had begun to weaken the credit of theſe ſigns, by a very few experiments only; how much more does it behove us to beware at preſent, when the experiments have multiplied upon us, to ſuch a degree, that it does not ſeem poſſible to reduce the exceptions to any certain heads (*t*).

And how much cyſtic calculi may vary, not only in colour, and form, but even in the very external, and internal ſtructure, and in the mode of their ſubſtance likewiſe, ſo as to be even ſometimes pellucid, has been accurately remark'd above (*u*); leſt if any ſhould, at times, occur, which differ in ſome reſpects, or even conſiderably, from the common appearance of biliary calculi, you immediately pronounce that they are not hepatic; and that you may previouſly, and particularly, conſider the other properties, and well weigh all the ſymptoms, which have preceded, accompanied, or been the conſequents of their excretion.

46. Nor indeed need the magnitude itſelf, to ſay nothing of the immenſe number, always deter you from ſuppoſing them to be hepatic. That the calculus was, without doubt, "of a ſurprizing magnitude," which a certain woman had diſcharg'd by ſtool, Vaterus (*x*) teſtifies: and yet the woman dying a little after its diſcharge, five others, of a leſſer ſize, were found in her gall-bladder, being "of ſuch a figure that it might be ſeen how they had "adher'd to that larger one," which reſembled a little heart. You ſee, therefore, that this had all been in the cyſt with them; and that its magnitude was no hindrance to its being diſcharg'd from thence, and coming down into the cavity of the inteſtines.

That alſo was large, inaſmuch as it "equall'd the joint of a man's thumb," which the mother-in-law of the celebrated Van Swieten (*y*), who was liable to periodical paroxyſms of the jaundice, diſcharg'd from the inteſtines, at the end of two days, after very ſevere, and excruciating, pains in the ſeat of the duodenum itſelf; and which was hollow'd out into two cavities on its ſurface, that ſhow'd two calculi ſtill to remain, which were, themſelves, alſo diſcharg'd afterwards, being not much leſs in ſize than the former. And yet the great bulk of this calculus had not prevented it from ſtruggling through the narrow paſſages of the ducts.

Nor is it to be wonder'd at: for although the ductus choledocus is narrow, although the cyſtic is ſtill more narrow, and the paſſage of it impeded by valves, they are nevertheleſs membranous, and, for that reaſon, can bear almoſt incredible dilatation. And from this cauſe it was that Bezoldus (*z*), found the cyſtic duct "eight times larger than it generally is, ſo as to equal "the thickneſs of a man's thumb; and in the middle of its length, a cal-"culus of a remarkable ſize." And I myſelf, as is ſaid elſewhere (*a*), have ſeen, "the common and cyſtic ducts, and the hepatic quite within the liver, "ſo dilated as to have a circumference equal to two inches," in an old man, in whoſe cyſt, but particularly in the branches of the hepatic duct, I found calculi.

(*t*) N. 25. 26.
(*u*) N. 16. & ſeq.
(*x*) Diſſ. ſupra ad n. 16. cit. theſ. 3.
(*y*) Comment. ſupra ad n. 15. cit. §. 950.
(*z*) Diſſ. de cholelitho caſ. 1. n. 5.
(*a*) Epiſt. anat. 1. n. 43.

But in a woman whoſe gall-bladder contain'd a large calculus, although not yet quite indurated, the orifice of the common canal, where it opens into the duodenum, which is, at other times, very narrow, was ſeen, by Heiſter (*b*), to be ſo dilated, "that it could with eaſe admit the little finger of a "man." And Hen. Albertus Nicolai (*c*), having found the ſame canal expanded quite to the gall-bladder, "in a very extraordinary manner," found the orifice no leſs open than it was found by Heiſter. But the younger du Verney (*d*) had even ſeen it larger. And Trew (*e*) had ſeen it very lax in a body, wherein the biliary ducts were equally dilated: the diameter of which, was found to be three times larger than it naturally is, by Kniphofius (*f*).

Other obſervations of this kind, which were at hand, I omit to mention; for theſe that I have mention'd, are not only ſufficient, but I ſhall produce ſome preſently (*g*), among which there will be one inſtance of a much greater dilatation. Since, therefore, theſe canals may be ſo dilated, and are found to be ſo dilated, there is no reaſon why we ſhould doubt that gall-ſtones, even when they are of a conſiderable ſize, may paſs through them; except when thoſe pains in the right hypochondrium, which are the natural effects of ſuch a dilatation, have not preceded. Wherefore as I commend Hoffmann, when ſpeaking of thoſe twenty ſtones of a remarkable ſize (*h*), for not ſuppoſing it altogether incredible, that in the ducts whereof I ſpeak, "very "ſmall bilious calculi might firſt adhere, and, by degrees, get an increaſe "from the bile which flow'd by them, and a great dilatation of theſe ducts "being ſucceſſively made, be obſtructed there, for a long time;" ſo again I commend the ſame author, even ſtill more, becauſe he has ſhown himſelf to be doubtful, and even more inclin'd to the contrary opinion, for this reaſon, becauſe theſe ſtones had been diſcharg'd, "without any violent pains "of the right ſide having preceded."

I alſo ſet down as commendable in Bezoldus (*i*), that though pains of the right hypochondrium had, for the ſpace of ſix years and more, preceded the diſcharge of a gall-ſtone; and although he, himſelf, and not without reaſon, judg'd it to have proceeded from the biliary ducts; yet he profeſs'd that he would "not obſtinately adhere to the opinion," I ſuppoſe becauſe there had not been an unuſual ſeverity of pain in that part, and greater than at any other time, when the ſtone, having, at length, overcome the narrow paſſes of the orifice of the ductus communis, ſuddenly burſt forth into the inteſtine; or, at leaſt, becauſe there had been no exacerbation of pain, in proportion to the great bulk of the ſtone: and if it had been confin'd in theſe ducts ſo long a time, it certainly could not but have brought on a jaundice, unleſs ſome extraordinary diſpoſition of the ducts be ſuppos'd; yet there is not a word ſaid of either of theſe appearances.

I wiſh I could ſpeak equally in commendation of Abraham Vater (*k*), in other reſpects a learned, and ſagacious phyſician, who does not doubt but two calculi "of a conſiderable magnitude," that were diſcharg'd by ſtool,

(*b*) Act. n. c. tom. 1. obſ. 181.
(*c*) Commerc. litt. a. 1732. hebd. 33. n. 11. ſub. 4.
(*d*) Loco indicat. ſupra ad n. 13.
(*e*) Act. n. c. tom. 4. obſ. 140.
(*f*) Eorund. t. 8. obſ. 30.
(*g*) N. 47.
(*h*) Obſ. ſupra ad n. 46. cit.
(*i*) Diſſ. modo cit. caſ. 2 & §. 7.
(*k*) Obſ. 3. ſupra ad n. 42. cit. §. 2. & ſeq.

"came

" came quite from the gall-bladder, although " neither pain, nor any other " troubleſome ſymptom, had been previouſly perceiv'd from them," and though, even at the time, the excruciating pains of the belly were not ſeated in the right hypochondrium, but " had firſt occupied the umbilical region, " and, at length, fallen upon the region of the loins." Yet he is not without his weight of reaſons. But while among theſe, he produces examples of the very great dilatation of the very narrow oſculum uteri in child-birth, and of the great diſtention of the ſlender ureters in calculous patients, it is ſurprizing, it never occur'd to him, that neither the one, nor the other, is ever dilated, without ſevere pains.

47. However, let us ſee what may be ſaid for Vaterus. An obſervation of Traffelmann is extant in Schenck *(l)*, in which he deſcribes " the me- " atus of the bile, where it is inſerted into the duodenum," as he himſelf had found it, " wide, inflated like a ſtomach, and fill'd on every ſide with " calculi," ſome larger, and ſome ſmaller. If you aſk what was the proximate cauſe of the patient's death (who was a man of princely rank); it was a coma vigil, degenerating into an apoplexy. If with what ſymptoms he was previouſly troubled, you will find nothing at all, beſide an incredible thirſt, wherewith he had been tortur'd all his life-time. And can you ſuppoſe, that the phyſician who made this obſervation, and who appears to have been a diligent man, would, if a jaundice, or any pain in the right hypochondrium, or if any other ſymptom, which related to the meatus of the bile being ſo diſtended with calculi, had afflicted his own prince, either have been ignorant of it, or have paſs'd it over, in an obſervation which was not very ſhort? But if you do not believe this, you muſt of courſe acknowledge, that beſides another duct by which bile might be carried to the inteſtines, and a jaundice prevented, it is poſſible that the meatus choledocus may, by means of calculi, which were before very few, being gradually increas'd therein, both in number, and magnitude, be immoderately diſtended indeed, but ſo ſlowly, and gently, that the patient may not at all complain of it.

Yet whatever you may think of this caſe, you will always be of opinion with me, that theſe things are very rare, and will, at the ſame time, obſerve, that quite a different judgment is to be form'd of quieſcent calculi, and of thoſe which have paſs'd through the ſtreights of the whole cyſtic, and common duct, even to its termination, by force. I do not, however, require, that as in the obſervation of Tinctorius *(m)*, after a pain of the right ſide, which was extended to the inteſtines, there be diſcharg'd, together with the calculi, " a bloody and purulent matter;" it is ſufficient for me, as it was for Bartholin *(n)*, " that the ductus choledocus alone was dilated," which was ſeen by him, on a ſimilar occaſion; and as, ſometimes, during this dilatation, when the calculi are confin'd in the narrow parts of the ducts, and begin to be mov'd from thence, the ducts are hurt by the angles of the calculi, and the diſcharge, at length, happens not without the rupture of an abſceſs, which was thus brought on, and an excretion of blood and pus by ſtool, ſo, for the

(l) Obſ. med. l. 3. ubi de cholidocho meatu obſ. 3.

(m) Vid. ſupra n. 42.

(n) In ead. obſ.

moſt part, this dilatation happens with much leſs violence, but ſcarcely eve without pain.

I have already deſcrib'd in a former work (*o*), and taken notice of, even in the preceding letter (*p*), an obſervation of Valſalva, in which the upper part of the ductus choledocus communicated with the large cavity of an hepatic abſceſs, and the other part of it was enlarg'd ſo as to admit the finger, and, by this means, ſhow how in a living body, it could tranſmit more than two hundred veſicles, with which even then that abſceſs abounded, to the inteſtine. Of the many which had formerly been diſcharg'd by that meatus, it is probable that ſome had been obſtructed in the narrow part of the duct, by coagula of blood, and that the bile, the paſſage of which was reſtrain'd, had by forcing from above downwards, together with the blood, dilated the canal.

This, however, is certain, that the morbus regius, vomitings, and pains, in particular, had preceded, which pains were ſo violent in the right hypochondrium, as frequently to excite the moſt ſevere diſtentions of the nerves. Which ſymptoms, and others there advanc'd, though you may in great meaſure refer to ſo very conſiderable a diſeaſe of the liver, yet if any one ſhould chooſe to refer ſome part of them to the dilatation of the meatus choledocus, you certainly cannot deny the plauſibility of his opinion. And if you do not deny that this may happen without pain, in a duct which is not irritated by angular, rough, and large ſtones, but even relax'd by blood, and ichorous matter, often flowing through it, conſider whether you can poſſibly ſuppoſe, that the ſame can happen without pains when the lower ſtreights of this duct have not been previouſly relax'd, but even contracted, from the irritations of the calculi?

48. Do not expect that I ſhould make this letter, which is already too long, ſtill longer, by adding many things in regard to the cure of this diſeaſe. Of which it will be ſufficient to hint a few things. I have already ſaid (*q*) that this diſorder often recurs, nor is certainly known, unleſs when ſome calculus has been diſcharg'd, which previous pains about the region of the liver, had prov'd to have proceeded from thence. Therefore, one part of the cure will be to endeavour, when very ſharp pains of this kind ſhall return, that the calculus may be diſlodg'd from theſe ſtreights. A ſecond part, that if any other calculus remains, after this has been diſlodg'd, it may, if poſſible, be diſſolv'd. A third, to prevent the generation of new calculi. And each of theſe parts of the cure are to be attended to ſeparately, and diſtinguiſh'd according to our poſition, nor ought the times, which belong to every one of them, be raſhly confounded, as ſome ſeem to do, who heap up remedies promiſcuouſly upon their patients; but the nature of the caſe, and the analogous cure of the urinary calculus, which is diſtinct in like manner, ought to be ſet before our eyes.

49. When the patient, then, is attack'd with theſe violent pains, we muſt do all in our power to appeaſe them, not only to prevent his being rack'd, and falling into danger of inflammation, or diſtention of the nerves, but alſo

(*o*) Epiſt. 3. anat. n. 10.
(*p*) N. 10.
(*q*) N. 42 & 44.

that the calculus may get through the narrow paſſages. For the more this concretion, like a heterogeneous body, irritates the ducts, the more the ducts are contracted upon the calculus, for which reaſon they both increaſe their own tortures, and prevent the paſſage of the ſtone. For this reaſon it is neceſſary to relax again and again: and to thoſe things which are, of themſelves, relaxing, and emollient, muſt be added, for the ſame end, diluters, demulcents, anoydnes, and the moſt temperate antiſpaſmodics, and, if intolerable pain compels you, even opiates.

Nor is it neceſſary to relax, only by internal remedies, but alſo by remedies externally applied, as far as it is in our power; I mean by the uſe of clyſters, unctions, fomentations, and baths. To all which, where there is a fulneſs of blood, I do not ſee why venæſection ſhould not be premis'd, not only to prevent the chance of an inflammation being brought on, but alſo to prevent the paſſages from being ſtreighten'd, by the turgeſcency of the ſmall veſſels. Moreover, as I recommend every thing that may relax, ſo I violently ſuſpect every thing that can irritate. For the detriment which they bring, by forcing the ducts to contract themſelves, and become ſtill narrower, is certain; and the advantage which many expect from the impulſion, and extruſion, of the calculus, uncertain.

Yet there are, you will ſay, inſtances of calculi reported, which powerful impellents, or ſtrong emetics, and purgatives, have diſlodg'd. I grant it. But who dares, purpoſely, to imitate the happy raſhneſs of a caſe, without knowing (and who can for certain know?) that the paſſages are, already, ſufficiently relax'd, ſo that nothing but the laſt impulſion, and agitation, is wanting; and that the caſe, at preſent, is not quite the reverſe, ſo that by this raſh and haſty method, the calculus muſt be thrown into ſtreights, from whence nothing can diſlodge it; by which, not only the pains become more excruciating, but the danger is greatly increas'd.

And indeed I ſee Hoffmann aſſerting (*r*), that emetics "are often found to "be highly pernicious, ... if a calculus, inherent in the ductus cyſticus, "produces very grievous anxieties about the præcordia;" and Reverhorſt (*s*), "readily confeſſing," that emetics "are a doubtful kind of remedy," whatever duct is obſtructed by the calculus; and, finally, Scheffelius (*t*), purpoſely to omit others, for the ſake of brevity, expreſly ſays, in regard to purging medicines: "this I certainly would not imitate, as I ſhould fear leſt "the calculi were ſo ſituated, at the ſame time, that they could not be "expell'd, but might be diſturb'd in their ſituation, and the pains from "thence, exaſperated," which even anger alone, as he immediately ſhows, and not only the ſtimulus of purging medicines, eaſily excites.

50. You perceive that he ſpeaks of purging medicines, at the time, alſo, when the pains have ceas'd, by reaſon of the calculus being diſcharg'd: which is the ſecond part of the cure. And I would, even then, abſtain from purgatives, for the reaſons juſt now mention'd, and would rather cleanſe the inteſtines, by more mild remedies, leſt the calculus that has been thrown into their canal, ſhould happen to be obſtructed there, and get ſuch an in-

(*r*) C. 12. ſupra ad n. 44. cit. in cautel. §. 1. (*t*) Diſſ. ſupra ad n. 13. cit. §. 30.
(*s*) Differt. ſupra ad n. 16. cit. §. 66.

creaſe of bulk, as would make it, ſome time or other, hurtful to the patient. And I would have you beware of calling me a too timid practioner, for this reaſon, or if you chooſe it, even call me ſo; for I am leſs afraid of this, than of being call'd a very bold one, or, at leaſt, in this ſpecies of diſorder, in particular, wherein, as is demonſtrated above (*u*), frequently no kind of inconvenience is perceiv'd, when the calculi are in a ſtate of reſt. For which reaſon I would have you ceaſe to wonder, that in this ſecond part of the cure, I have omitted the conſideration of impellents, and have only propos'd this one thing to be done, I mean that if any calculus ſhould happen to remain, it may be diſſolv'd, provided it be poſſible to diſſolve it.

It does not, however, eſcape me, how little the remedies, recommended for this purpoſe, generally anſwer the expectations of the patient, or the promiſes of the practitioner, whether they are of a mild kind, which I would willingly admit, or of a very acrid nature, or in any meaſure irritating, which I would ſhun. Nor is it to be wonder'd at; ſince even out of the body, the calculi which are long preſerv'd in thoſe fluids, by which, within the body, they are ſuppos'd to be diſſolv'd, are by no means diſſolv'd, unleſs they happen to be of the ſofter kind, ſuch as Borrichius (*x*) ſaw "almoſt "wholly diſſolv'd in warm water," and after him Hoffmann (*y*); and I, even in water which was not warm, have ſeen them contract fiſures, and burſt into fragments, as I have written to Schroeckius (*z*). And they even ſometimes, of themſelves, break aſunder into ſmall pieces, as I have obſerv'd in ſome black ones; or even melt into a moiſture, as that which Lanzonus (*a*) obſerv'd "to be ſpontaneouſly diſſolv'd, into a green liqour."

For although, in order to deſcribe this calculus, he ſays that "he had "found the whole of the bilious juice to be ſtony," he has either abus'd the word "ſtony," in order to ſay that the bile was converted into a calculus, or the cruſt ſeem'd in great part to be ſtony, whereas the internal ſubſtance was very ſoft. On the contrary, the juncture may be very ſoft, and the ſubſtance, nevertheleſs, extremely compact. Thus Platner (*b*) ſaw that the fragments of a calculus, which, not being very cloſe, "had ſoon fallen "into pieces, could neither be diſſolv'd by warm water, nor by ſpirit of "wine, although they were ſteep'd in theſe liquors, for ſeveral days together, "in a warm place." So alſo Bezoldus (*c*), having left little pieces of calculi, both in warm water, and ſpirit of wine, even rectified for ſome time, did not ſee that they were "entirely diſſolv'd." Nor did Hoffmann (*d*) ſee "that gall-ſtones, which were of a more ſolid texture, and ſaturated colour," were diſſolv'd in this manner.

Valliſneri (*e*), on the other hand, has experienc'd that they are diſſolv'd by no liquor more eaſily, than by rectified ſpirits of wine made hot, and the ſpirit of turpentine. And in regard to the ſpirit of wine, he has the author of whom Haller (*f*) ſpeaks agreeing with him; but ſome diſſent from him in regard to the other ſpirit, and amongſt theſe Tacconus (*g*), who entirely

(*u*) N. 37. 38.
(*x*) Apud Bartholin. cent. 3. epiſt. med. 85.
(*y*) Cap. 3. ſupra ad n. 44. cit. §. 6.
(*z*) Obſ. ſupra indic. ad n. 20.
(*a*) Eph. n. c. cent. 3. obſ. 62.
(*b*) Progr. ſupra ad n. 17. cit.
(*c*) Diſſ. de cholelitho §. 5.
(*d*) §. 6. paulo ante cit.
(*e*) Epiſt. ſupra ad n. 13. cit.
(*f*) Nota "r" ſupra ad n. 25. cit.
(*g*) Supra ad n. 16. cit.

differs

differs in reſpect to them both. The ſame author; not to be too prolix, ſince you may, of yourſelf, ſee in the authors, whoſe names I have mention'd, and in others alſo, ſuch experiments made with theſe and other liquors; the ſame author, I ſay, although he had ſeen one of thoſe calculi, of which he has firſt ſpoken, that he had thrown into ſpirit of nitre, "be-"come very tender," nevertheleſs affirms of thoſe which he ſpeaks of laſt, that they "were not at all chang'd" by that ſpirit, which both Valliſneri (*b*), and Bezoldus (*i*), had, in like manner, obſerv'd.

From theſe varieties you will, moreover, learn this circumſtance, that we ſhould not know what lithontriptic we ought to uſe, in this, or in that particular caſe, if it were certain, that theſe calculi, as they are, for the moſt part, leſs hard, and more friable, than the urinary calculi, ſo they are more eaſily diſſolv'd by their peculiar lithontriptics: although in comparing both together, not only the ſubſtance, and the adheſion, or joining, of the parts are to be conſider'd, but alſo how much ſooner the diſſolvent liquor, and how much greater a quantity of it, is carried to the urinary paſſages than to the biliary.

And on account of this animadverſion it was, that, although in the firſt part of this cure, very large draughts of warm water are propos'd by many, I ſaid nothing thereof, which is a ſubject I ſhould not have been ſilent upon, if the ſame were propos'd, when a calculus was confin'd in the kidnies, or ureters. Yet if you aſk which I would ſelect in particular, out of ſuch a number of different remedies, that are promiſcuouſly recommended by many, in this ſecond part of the cure; no others more readily, I ſhall anſwer, than thoſe which are the moſt incapable of doing harm; as, for inſtance, the juice of taraxacum, ſince with this Boerhaave is ſaid, by his diſciple Scheffelius (*k*), "to have often cur'd the calculus of the liver ſuc-"ceſsfully," or of freſh graſs, which has been celebrated by every body, ſince Gliſſon (*l*), and Sylvius (*m*), for this purpoſe. And certainly the illuſtrious Van Swieten (*n*), has ſhown what may be done in ſuch a caſe, by this one herb alone, from the example of a certain pauper.

This author, alſo, having overcome this diſorder in others, likewiſe, by decoctions of graſs, and taraxacum, and by other things taken conſtantly, for a long time together, ſays, "that he had then always found calculi, "or, at leaſt, calculous coagula, in a very conſiderable quantity, in the "ſtools." And although he confeſſes, that he was not, for this reaſon, certain that theſe were "the parts of comminuted calculi," rather than the ſmall beginnings of new calculi, ſuch as I have more than once demonſtrated, above (*o*), to be found in the cyſt; yet the obſervations of Gliſſon, which he himſelf alſo allows of, ſufficiently ſhow that thoſe calculous tubuli (*p*) which are form'd in the biliary paſſages, of oxen, in the winter, are diſſolv'd by feeding on freſh graſs; for otherwiſe, he would not have found theſe tubuli frequently "about the time of Lent, or Eaſter only, or before," but afterwards equally.

(*b*) Epiſt. cit.
(*i*) Diſſ. cit. §. 6.
(*k*) Diſſert. ſupra ad n. 13. cit. §. 31.
(*l*) Anat. hepat. c. 7.
(*m*) Prax. med. l. 1. c. 45. n. 13.
(*n*) §. cit. ſupra ad n. 46.
(*o*) N. 19.
(*p*) Vid. ſupra, n. 12.

51. Finally,

51. Finally, the third part of the cure will prevent new calculi being generated, in the firſt place, if it ſhall be able to amend whatever diſorders there may be in the liver, and, in like manner, in the blood, upon which the production of calculi depends: in the ſecond place, if it remove thoſe things by which theſe diſorders are us'd to be brought on. Theſe diſorders in the liver, are a weakneſs, laxity, obſtruction, and other things of the like kind; and in the blood a quantity of viſcid and earthy particles, and a ſlow propulſion thereof, eſpecially through the liver. Moreover, theſe diſorders are brought on by the too frequent uſe of unwholeſome meats, and drinks; by the bad digeſtion of the ſame; by the quantity of diluting liquors not anſwering to the quantity of food taken in; by too much ſleep; by a ſedentary life; eſpecially by bending the body too much forwards; by violent paſſions of the mind, and any other cauſes which you ſee plainly, of yourſelf, ought to be remov'd by the phyſician.

But, without doubt, this part of the cure is ſufficiently treated of by many. Yet as it very often happens, either by the conformity of the patient not being ſufficiently continu'd, or by the difficulty of bringing back the liver to its perfect ſound ſtate, juſt as we ſee in the caſe of urinary calculi, that new ones are generated; nevertheleſs, it will, at leaſt, be worth while to endeavour, that, as far as is poſſible, the canals of the bile may be preſerved ſoft, and lax, that they may not give great reſiſtance to the new calculi which are to paſs through them, but may eaſily yield; and this will be brought about, by means of a continual, but moderate, uſe of diluters.

52. As to the lithotomy which has alſo lately been thought of, in the gall-bladder, do not be ſurpriz'd that I made no mention of it above. For, in the firſt place, the pains which are excited by gall-ſtones, that are endeavouring to diſcharge themſelves, are not only brought on by thoſe which come from the cyſt, but alſo by thoſe that come from the hepatic duct. In the ſecond place, thoſe cyſtic ſtones which are the largeſt, and on account of which this lithotomy ſeems, to ſome perſons, to be chiefly deſirable, neither endeavour to diſengage themſelves, nor create any great uneaſineſs; or, at leaſt, for the moſt part. And to theſe we may add, that unleſs ſome accident has united the gall-bladder with the peritonæum, the cutting of it is deſtructive; and although this connexion has taken place, in ſome bodies, from the effect of diſeaſe, in which chance gave occaſion to ſuggeſt this new ſpecies of lithotomy, as it often has ſuggeſted other things, yet how ſeldom ſuch a connexion is met with, even in a morbid ſtate of theſe parts, is well known to anatomiſts: and ſurgeons know very well, how difficult it is to be certain when it does really exiſt.

Laſt of all, although there were no danger in cutting, can you ſuppoſe there would be no great difficulty in healing the wound? We have, before our eyes, examples of three women, one of Bologna (*q*), of Francfort (*r*), and of Gottingen (*s*), in whom a tumour, having ariſen in the epigaſtrium, and being open'd, either by art, or ſpontaneouſly, diſcharg'd cyſtic calculi at its aperture. I read that the firſt was cur'd: that the ſecond had a fiſtula left, by which a thin and chylous kind of liquor, but of a yellow colour, diſtill'd:

(*q*) Vid. Taccon. ſupra ad n. 16. cit. (*r*) Act. n. c. tom. 6. obſ. 69.

and

and the third had an ulcer remain, which, with its ſanies, diſcharg'd "bilious "calculi at times." And this laſt hiſtory may, perhaps, lead the ſurgeons into heſitation, whether the wound ſhould be ſhut up afterwards, or kept open, in ſome meaſure, for fear of new calculi.

It does not eſcape me, however, that before the ſwelling occupies all the muſcles which lie before the cyſt, cauſes a conſiderable ſuppuration on all ſides, and the pus forms winding ſinuſſes for itſelf, which require ſo much diligence, and application, in the cure, as in the Franckfort woman; it does not, I ſay, eſcape me, that the caſe muſt, of courſe, turn out more ſucceſsfully, with thoſe who open, by inciſion, the cyſt which has now cloſely coaleſc'd with the peritonæum: and that the ſigns of ſuch a coalition have been pointed out by a ſkilful ſurgeon. Nevertheleſs, as it is a thing that is entirely new, notwithſtanding it may ſometimes have great utility, I thought it rather became me to wait till time ſhall confirm its advantage, and remove all doubts, dangers, and difficulties, by many repeated experiments, than to be in haſte to propoſe the operation, juſt as if it were altogether perfect.

53. Thus you have a treatiſe on biliary calculi; not that, indeed, which Valliſneri wiſh'd for (*t*); but as much as it was in my power curſorily to add to theſe things of which I had written, leſs at large, before, once, twice, and even three times. And if Soſigenes, as you have it in Pliny (*u*), "in his "three meditations, although he was more accurate than others, did not "ceaſe to have doubts, and frequently to correct himſelf;" do not wonder that I, though not a negligent man indeed, but yet by no means to be compar'd with thoſe who have hitherto written of theſe calculi, ſhould have added this fourth meditation to the three former. Farewell.

(*s*) Haller opuſc. pathol. obſ. 33. hiſt. 8.
(*t*) Epiſt. ſupra ad n. 13. cit. adnot. 2.
(*u*) Nat. hiſt. l. 18. c. 25.

LETTER

LETTER the THIRTY-EIGHTH

Treats of the Hydrops Aſcites, Tympanites, of the Dropſy of the Peritonæum, and of others that are call'd encyſted Dropſies.

I Am afraid that the very long letter which was lately ſent you from me, will be ſucceeded by one ſtill longer, as I ſee that the twenty-firſt ſection in the Sepulchretum, the argument of which I muſt now purſue, that is *de Ventris Tumore Hydrope*, is ſo prolix. For in regard to the nineteenth ſection, which is entitled *de Scorbuto*, or the twentieth, entitled *de Cachexia Anaſarca, Lecuophlegmatia*, I have no reaſon to dwell upon either, ſince in thoſe cities, wherein I have ſpent my life, it happens very rarely, if ever, that any one is carried off by the ſcurvy; and you will find diſſections of thoſe who have died of this diſeaſe, up and down among other authors, and ſome particular diſſections in the writings of Poupart *(a)* and Mead *(b)*; and the three other diſorders, cachexy, anſaraca, and leucophlegmatia, are of ſuch a kind, that they may, with much more propriety, or at leaſt with much more convenience, be refer'd to other heads.

Wherefore, the ſection that is dedicated to them; when you take away the Scholia, and the obſervations, which, as we are expreſsly admoniſh'd, relate to fevers, phthiſis, pains, or tumours, of the belly, melancholy, paralyſis, dyſpnœa, ſyncopé, or other diſorders, and one of which is, in the mean time, repeated *(c)*; is reduc'd to but a ſmall number: and many of theſe relate equally to other ſubjects, and particularly to dropſies of the abdomen. And if the aſcites and tympanites, of which I am to treat, were the only ſubject-matter of the twenty-firſt ſection, perhaps this letter would not be longer than the former. But, as beſides thoſe, the greater of the other tumours, with which the belly is ſubject to be affected, are ſpoken of in that ſection, I have reſolv'd to defer the conſideration of theſe to the next letter, and not to treat of any other diſorders here beſides both the dropſies of this cavity, and of the peritonæum, and of thoſe that are call'd encyſted.

Yet you will not expect to have over again, in this place, thoſe obſervations which I have given in other places, and particularly, when writing of the dropſy of the thorax; for I ſhall only give you ſuch as have not been yet

(*a*) Mem. de l'acad. r. des ſc. a. 1699.
(*b*) Monit. med. c. 16.
(*c*) Vid. obſ. II. §. 6 & 9.

related,

related, either from Valſalva's papers, or my own. And theſe are Valſalva's which immediately follow.

2. A man of ſixty years of age, and troubled with a hernia, was ſeiz'd with a difficulty of breathing, and thirſt. His belly and feet became tumid. At length, his thirſt remitting, he died. The adipoſe membrane of the abdomen, and the muſcles when cut into, were found to contain a ſerous matter in their interſtices: a fluid of which kind was alſo found in the cavity of the belly. With the lower part of this cavity, on the left ſide, a ſacculus made out of the peritonæum, and containing a portion of the inteſtines, communicated. In the thorax, the pericardium abounded with ſerum. The blood in the ventricles of the heart was fluid.

3. Whatever was the cauſe of the dropſy, in this man; for although it cannot be denied, that when the inteſtines fall down, and form a hernia, a lymphæduct may ſometimes be burſt in the meſentery, which is drag'd down with violence, yet that this happens very ſeldom, and when it does happen, that the chyle flows out together with the lymph, we are not ignorant; whatever then was the cauſe, you ſee that to the aſcites, two other dropſies, that is the anaſarca, and the hydrops pericardii, were added. For it rarely happens, that this diſeaſe is ſimple: which almoſt all the following hiſtories will join to confirm.

4. Julia Bonetti, a woman of fifty-five years of age, ſlender, and, on both ſides, gibbous, having begun, a few months before, to complain of her reſpiration being ſomewhat difficult, was, at length, brought, on the twenty-ninth of November, in the year 1688, into the hoſpital of St. Mary de Morte at Bologna, as a patient of the houſe. She breath'd laborioufly, and that more when ſhe lay on her left ſide than on her right. But if ſhe ſat up in bed, then the difficulty of breathing was ſo much increas'd, that ſhe was almoſt ſuffocated thereby. All remedies being of no effect, and the difficulty of breathing increaſing daily, her pulſe became weak, and languid: ſhe was attack'd with frequent ſwoonings; her face was tumid, and, in ſome meaſure, inclin'd to a livid colour; and thus ſhe died in the beginning of December. The cavity of the belly was fill'd with a limpid water. The omentum, being without fat, was fill'd with certain veſicles. The cavity of the thorax, on the right ſide, contain'd about four ounces of water, and the left as much as it could poſſibly hold, ſo that it flow'd out as the ſternum was cut away. In this cavity the lungs were ſomewhat tumified, and of a purple colour, as if they had been ſeiz'd with inflammation; but in the other, they differ'd little from their natural ſtate. The right ventricle of the heart, together with a great quantity of concreted blood, had, alſo, a polypous concretion, of the thickneſs of a finger, which was produc'd both into the vena cava, and the pulmonary artery. In the left, only the beginning of a concretion of this kind appear'd.

5. Which of the dropſies preceded the other, whether that of the thorax, or belly, is not eaſy to pronounce, in hiſtories of this kind. However, if on account of the deprav'd ſtructure of the thorax, you would, alſo, have it that this cavity muſt firſt have collected the water, I ſhall not conteſt the opinion. Be this as it will, I ſhould ſuppoſe that on account of the ſame ſtructure, thoſe circumſtances had happen'd, which are taken notice of in this

woman's hiſtory, and which are ſo contrary to what generally happens; I mean, that ſhe breath'd with more difficulty when lying on that ſide, in which the lungs were tumid, and there was a great quantity of water; and that when ſitting up in bed ſhe was almoſt ſuffocated.

6. An old woman began to have her whole body ſwell'd, in the autumn, to have her reſpiration become difficult, and her thirſt troubleſome. To theſe ſymptoms was added, (though indeed the thirſt left her before the end of her life) a cough, attended with a ſpitting of catarrhous matter, and a difficulty of lying down on the left ſide, ſo that, for this reaſon, ſhe almoſt always lay on her right ſide: and in this poſture ſhe died, when her pulſe had become ſo contracted, that it could ſcarcely any longer be perceiv'd.

While the ſkin and muſcles of the body were cut into, a great quantity of ſerum was diſcharg'd. The belly was alſo fill'd with ſerum, which had protuberated with a very large, but ſoft tumour. This ſerum, being receiv'd in a glaſs veſſel, reſembled the colour of urine, and after ſtanding one or two days, ſhow'd a concretion ſwimming upon it, of ſo firm a nature, that it was not broken into pieces, even by the agitation of the veſſel. The remaining fluid part, being put on the fire, became preſently turbid, and grew pretty thick, and, ſoon after, began to ſhow a ſlight concretion, on the ſides of the veſſel: but as the evaporation proceeded, it form'd a pellicle on its ſurface: and after having decreas'd, thus, to leſs than half its quantity, became perfectly ſimilar to barley-cream. The liver was diſtinguiſh'd, here and there, with whitiſh ſpots, which were externally larger, and internally ſmaller, and was in general of a pale colour. The ſpleen was very hard. The lymphatic veſſels occur'd, pretty evidently, of themſelves, about the loins, and below, through the internal parts of the belly.

In the left cavity of the thorax, the lungs were on all ſides free; but in the right, were tied to the pleura, in the whole circumference, by many membranous connexions, and thoſe entangled with each other: and if you handled theſe membranes, a great quantity of ſerum, which had been ſhut up in their interſtices, iſſued forth. In the ſinuſſes of the heart, was contain'd a great quantity of blood, fluid in its conſiſtence, and of a dilute red in its colour, as in all the veſſels likewiſe: and the heart was ſurrounded with ſerum, wherewith the pericardium was not only fill'd, but had even been extremely dilated. This ſerum of the pericardium, although, in its colour, and the firm concretion that was ſpontaneouſly produc'd in it, very ſimilar to that which had been contain'd in the belly, yet did not coagulate, when applied to the fire, but being perpetually fluid, and flying off by degrees, left only a ſlight cruſt in the bottom of the veſſel. The ſaline particles, of both theſe kinds of ſerum, were examin'd, but were not found to be of any certain figure: yet the figures of the particles of the former kind of ſerum, differ'd ſomething from the figures of the particles of the latter. The concretion, which ſwam in the ſerum of the pericardium, was nearly of a ſpherical form, and ſeem'd to be made up of ſmall veſicles, as it were, collected together into one body.

7. It was a cuſtom with Valſalva, when he had found water extravaſated into the cavities of the body, not only to attend to the nature of it, but alſo to enquire thereinto, by experiments, of different kinds; often making uſe of

fire, and ſometimes mixing ingredients with the ſerum. He was wont to examine the ſituations of the lymphæducts likewiſe, and to remark whether they were turgid, or did not at all diſcover themſelves. Both theſe cuſtoms of his, you will remark in moſt of the obſervations of this kind, that he has left, but particularly in that which I have juſt deſcrib'd. He meant to inquire, I ſuppoſe, by both theſe methods, from whence the water had proceeded, whether from the rupture of thoſe veſſels, or from any other cauſe, that he might, perhaps, after a long ſeries of obſervations, attain ſo far, as, from a portion of water, taken from a dropſical perſon when living, to be able to diſtinguiſh that this had flow'd out of thoſe veſſels, and, conſequently, to pronounce the diſorder incurable.

For ſuppoſing this diagnoſis, as, for inſtance, in an example I have already taken notice of to you (*d*), this prognoſis follows, which was equally unknown to the ancients, as thoſe veſſels themſelves: by the diſcovery of which, ſome, who have rebuk'd thoſe that apply very diligently to anatomy, imprudently contended that the prognoſis, in this diſorder, was not at all chang'd; and this being thus chang'd, it is evident that the method of cure is alſo chang'd, which the ſame gentlemen denied; for why ſhould the phyſician trouble, with very ſtrong, and violent remedies, thoſe in regard to whom he ought to think, only how to preſerve their lives, as long as poſſible, inſtead of attempting to cure their diſorder?

But I ſaid that Valſalva had need of a long ſeries of obſervations of that kind, for this reaſon, becauſe the lymph itſelf is different, in different bodies, and at different times. And indeed Reverhorſt (*e*), moreover, added the difference of the place from whence it proceeded, ſaying that the aſcites, wherein a yellow, and bitter, water is drawn off, ariſes from the lymphatic veſſels of the liver being injur'd. But as I do not think it neceſſary to depend upon his authority, ſo I do not think it ſufficiently ſafe, to agree with thoſe who aſſert with Bonetus (*f*), that the water of dropſical perſons, which is "limpid, colourleſs, or but ſlightly ting'd," is from the lymphæducts, but that the water which is like "ſerum, ſometimes pure, ſometimes mix'd with "other humours, and reſembling the colour of urine," proceeds from the veins. For although in the patient of whom he ſpeaks, whoſe urine ſeem'd to be a lixivium of a quite black colour, rather than of a colour almoſt black, that limpid water, which he deſcribes, could have flow'd from no other part, but from the lymphæducts, into the belly, yet in others, whoſe urine is of a different kind, it may have come from ſome other part.

8. And again, if the lymph, which was at firſt limpid, be chang'd by ſtagnation, and mix'd with the putrid eluvies of the viſcera, which even itſelf does at length corrupt, muſt we, for that reaſon, ſuppoſe it not to have come from the lymphæducts? To this add the ſeveral fallacies, which, without a very cloſe, and accurate attention, may often impoſe upon us, in the diſſection of bodies. For the water, which firſt flows out, will be ſometimes limpid, not that it was ſo in the patient when living, but becauſe the groſſer particles having ſubſided, in the dead body, the water, which lies uppermoſt,

(*d*) Epiſt. 16. n. 5.
(*e*) Diſſ. de mot. bilis §. 21.
(*f*) Sect. hac 21. ſchol. ad obſ. 18.

becomes very pure. On the other hand, ſometimes, when it was pure in the living body, it is made impure from the very diſſection.

Thus I formerly obſerv'd, when I had begun to divide the ribs from the ſternum, in a certain dropſical woman, that the water burſt forth in a ſtate of perfect limpidneſs: but when I had divided all the ribs, and taken away the ſternum, that the water appear'd to be rediſh: finally, when I had handled the viſcera, and juſt begun to cut into them, that all the remaining water had contracted a red colour. And theſe circumſtances ought to be the more attended to, in proportion as there is leſs water originally, or leſs remaining, ſo that a little blood being gradually, and almoſt clandeſtinely, mix'd with it, the whole may be ting'd. There are hydropic waters alſo, which have impurities mix'd with them, even before diſſection, from a diſeaſe in ſome viſcus or other, as I have already hinted, which is leſs likely to deceive us, where the diſeaſe of the viſcus is conſiderable, and where there is a great quantity of water.

Thus in the diſſertation of Schacherus *(g)*, as to the aſcites was join'd an increas'd and diſeas'd ſtate of the ovary, it was not ſurprizing, that the water, which was, in other reſpects, pretty limpid in appearance, ſhould, by means of evaporation, " have ſoon coagulated into a fat ſubſtance, in ſuch a " manner, that one fourth part of it only, had conſiſted of water, which " was evaporated, and the other three were made up of the ſebaceous por- " tion, which remain'd behind." So I alſo remember to have heard Albertini ſay, that the waters of ſome hydropic perſons, by being expos'd to evaporation, had flown off in a very ſmall degree, but had in great meaſure, I ſuppoſe from ſome cauſe of this kind, coagulated; whereas the waters of others had, on the contrary, chiefly flown off, by applying the ſame degree of heat, and a very ſmall part, only, concreted.

But we muſt be extremely cautious, when the diſeaſe of the viſcus is ſo ſmall, that it may eaſily eſcape the eyes of the diſſecter, leſt if any part of the water coagulate, by the force of the fire, it ſhould not be refer'd to its true origin. From theſe things, and others, which I purpoſely paſs over, I would have you underſtand why I ſaid it was neceſſary, that Valſalva ſhould have made a great number of theſe obſervations, which I do not deſpiſe, but only require to be made with the moſt cautious, and exact diligence; ſo that thoſe in which there might be any fallacy, being ſet aſide, he might apply the others, compar'd with ſimilar experiments on the lymph, and on the ſerum of the blood, to thoſe purpoſes which he had propos'd to himſelf, whatever theſe might be, with advantage. To this kind of compariſon we are exhorted by the celebrated Phil. Frid. Gmelinus *(h)*, when he propoſes his experiments upon the water of an aſcites, taken from a certain woman. Others you will read upon the fluid, which the veſicles of an encyſted dropſy contain'd, made by the celebrated Jo. Chriſtop. Pohlius *(i)*. And ſome more ſimple experiments, as evaporation was alone made uſe of, you will find in the writings of the illuſtrious Senac *(k)*. You will find ſome peculiar ones, that is to ſay, ſome which relate to a milky dropſy, that aroſe, as it

(*g*) Diſſ. de virgine aſcit.
(*h*) Commerc. litt. a. 1745. hebd. 52. n. 3.
(*i*) Act. n. c. tom. 8. obſ. iii.
(*k*) Traité du Coeur. l. 4. ch. 3. n. 4. & ch. 9. n. 2.

ſeems, not only from chyle pour'd out of the chyliferous veſſels when ruptur'd, as in the obſervation of Littre (*l*), but alſo from this fluid being mix'd with a great quantity of that water, which is common to patients troubled with an aſcites; you will find them, I ſay, in the hiſtory of the Royal Academy of Sciences at Paris (*m*). But what kinds of water are, for the moſt part, drawn off from dropſical patients, and how various theſe are, the younger du Verney has taught in another part of the memoirs of the ſame Academy (*n*); and that in a more ſimple way certainly, as, without making uſe of any external aſſiſtance, he depends upon his ſenſes only; but in a much more commodious manner, and one that tends to be of more extenſive uſe, in forming a prognoſis.

9. But leſt we ſhould ſeem to be forgetful of the old woman, whoſe hiſtory I have given you (*o*), if you compare it with that which immediately precedes, of the gibbous woman (*p*), and with the firſt of the man (*q*), you will perceive that the old woman's lying-down was juſt ſuch as the ſide of the thorax, that was moſt affected, required. And in regard to the thirſt which remitted before death in the man, and was remov'd in the old woman, you may conceive of it in this manner; that either the power of feeling was grown very obtuſe, near the time of death, or that when the belly was quite diſtended, the moiſture, which remain'd in the blood, went in part to moiſten the fauces, as the catarrhous matter, which the old woman ſpat up, demonſtrated. For it is not neceſſary to ſuppoſe that the ſerum of the blood is unfit to remove thirſt, in all dropſical bodies, I mean that it is more like brine, as has been found by ſome who have taſted it, than water.

10. The belly of a man of fifty years of age, who had labour'd under an univerſal dropſy, notwithſtanding there appear'd no tenſion externally, was full of water. The liver was of a black colour, the ſpleen was ſomewhat increas'd, the other viſcera of the belly were ſound. The lymphæducts were extremely turgid: and as there were many glands below the emulgent veſſels, near to the vena cava, and round the great artery, thoſe ducts were carried from the meſentery to theſe glands, and from thence into the thoracic duct.

In the thorax was a watry humour, and the lungs were variegated with black ſpots. The pericardium was ſo far expanded with its proper dropſy, that it reſembled the urinary bladder of an ox, when diſtended with air. As all the veſſels of this body were large in proportion, ſo the heart was alſo large; and the left auricle thereof ſo dilated, that it almoſt equall'd one half of the heart, when of its natural ſize. And the heart had theſe remarkable appearances, that the external membrane was eroded on the left ſide, and the veſſels had varicous contorſions; but in the ventricles it contain'd a fluid blood, without any ſign of concretion.

11. It is not eaſy to ſuppoſe that Valſalva; as he had found the pericardium to be ſo greatly diſtended with water, and the left auricle to be ſo en-

(*l*) Hiſt. de l'acad. r. des ſc. a. 1710. obſ. anat. 7.
(*m*) A. 1700.
(*n*) A. 1703.
(*o*) N. 6.
(*p*) N. 4.
(*q*) N. 2.

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larg'd, that from hence, in all probability, as the motion of the blood muſt be on all ſides retarded, ſo an univerſal dropſy was in great meaſure the conſequence; it is not eaſy, I ſay, to ſuppoſe that he had not enquir'd, minutely, into all the ſymptoms with which the patient had been troubled, or that if he had heard of any thing peculiar, he would not have remark'd it. Yet in regard to the dropſy of the pericardium, as the old woman, alſo, of whom I ſpoke above (*r*), had her pericardium very much dilated with water, you might have ſeen among the ſymptoms related in that hiſtory, whether there was any thing peculiar to the dropſy of the pericardium, rather than the other preternatural appearances, which were found at the ſame time.

At leaſt, it was not, in the beginning of the diſeaſe, very difficult for the patient to lie down, nor neceſſary in the latter part of it; nor is it ſaid to have been with the head declin'd: which things you will compare with thoſe that are made mention of by me, where I have examin'd, with a ſtudious deſire after truth (*s*), other ſymptoms of that dropſy which have been propos'd by other writers. But leſt you ſhould begin to ſuſpect, from the next obſervation which I ſhall ſubjoin, that the peculiar ſymptom thereof, is a neceſſity of lying in a ſupine poſture, you muſt attend to many other hiſtories in which the diſorder was without this ſymptom, but, in particular, to that which will immediately follow the next.

12. An old woman of ſeventy years of age breath'd with difficulty, was very thirſty, troubled with a dry cough, and could lie only in a ſupine poſture. After theſe ſymptoms had laſted for a long time, and the feet began to be œdematous, ſhe died.

The belly was full of water. The lymphæducts about the great artery, where it gives off the emulgents, were turgid; in the meſentery, and elſewhere, they ſcarcely appear'd. The kidnies were ſmall, and without hydatids. In the thorax the lungs were ſound: and a ſmall quantity of ſerum was contain'd there. But the pericardium was full of it: in which the heart, being twice as big as it naturally is, contain'd a flaccid polypous concretion: and the auricles contain'd blood, with which they were very turgid. However the blood, in this body, preſerv'd its natural fluidity, and colour.

13. An old man of ſeventy was troubled with an œdematous ſwelling of the feet, and a great thirſt, and was ſeiz'd with a cough that was, at times, ſo painful, and vehement, as to make him ſeem on the point of ſuffocation. He ſpat up a catarrhous matter: he breath'd with difficulty: he could lie down in a ſupine poſture only: his pulſe was low and weak. He died.

In the belly water was extravaſated: and the lymphæducts, about the diviſion of the emulgent veſſels, were ſo tumid, that three or four were, each of them, ſeparately taken, equal in thickneſs to a gooſe quil. The ſpleen was very large, and ſhow'd ſome ſmall bodies on its external ſurface, like the grains of millet ſeed.

In the thorax, both lobes of the lungs adher'd to the back, the ſides, and the ſternum, leaving interſtices betwixt themſelves, and the pleura, which contain'd water. On the other hand, in the pericardium was no moiſture: and this part, itſelf, began already to be connected to the heart, by many

(*r*) N. 6. (*s*) Epiſt. 16. n. 45.

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membraneous fibres. In the ventricles of the heart was a coagulated blood, and in the right auricle alſo, in which, at firſt ſight, it reſembled a portion of the uterine placenta. In the left ventricle was a polypous concretion, which was univerſally unconnected.

14. You ſee, therefore, by comparing both theſe obſervations together, that although a ſupine poſture of lying down was, in both caſes, neceſſary, the pericardium, nevertheleſs, was not in both caſes full of ſerum, and even that in the old man, it contain'd no moiſture at all. And if you compare the diſorders of the viſcera one with another, you will find, indeed, that they were conſiderable in both the hiſtories, but not the ſame. Nor had both of them the ſame ſtate of blood; but even, which you might alſo have obſerv'd in the hydropic perſons ſpoken of above, that it was quite different in the two. For in the old woman it was fluid; in the old man coagulated: and what polypous concretion it had, was in her flaccid and lax, in him pretty compact, and, what was rarely obſerv'd by Valſalva, in the left ventricles, not in the right. The cauſes, therefore, of making uſe of one and the ſame poſture, in lying down, are various, and are frequently difficult to be accounted for, as I have ſhown already (*t*); and as will be ſhown by comparing the two following obſervations with each other, and with the laſt foregoing.

15. A woman of a ſlender habit, and in the twenty-ſeventh year of her age, having, four months before, receiv'd a wound at the navel, breath'd with difficulty, was very thirſty, expectorated a little, and complain'd of a pain in the left part of her thorax, on which ſide, as well as her back, ſhe could not lie down. All theſe ſymptoms growing very violent, ſhe died.

In the belly, all the viſcera were ſound; ſo that even in the inteſtines, where they correſponded to the navel, not the leaſt mark of diſeaſe could be diſtinguiſh'd, beſides a colour inclining to blackneſs. Yet the cavity of the belly contain'd three or four pints of yellowiſh water.

The cavity of the thorax, alſo, on the left ſide, was full of water, perfectly ſimilar to that of the abdomen, this circumſtance excepted, that certain concretions, like pellicles, ſwam therein. In this water was contain'd the lobe of the lungs, in a very ſound ſtate, and free from all adheſion. But the right lobe of the lungs exactly fill'd its cavity, inaſmuch as it adher'd to the pleura, every where, ſo cloſely, that it could ſcarcely be ſeparated: and it was a little indurated, ſo that it ſeem'd to have been, in ſome meaſure, attack'd with a phlegmon. Both ventricles of the heart contain'd a lax polypous concretion; yet the right a larger than the left. But in this body the lymphæducts were not at all turgid.

16. A young man, of about ſeventeen years of age, was ſeiz'd with a difficult reſpiration, with a dry cough, and a very great thirſt. He diſcharg'd but a ſmall quantity of urine. He had a little pain on his right ſide, and lay continually upon it. At length he died.

The belly was full of water: the inteſtines, and ſtomach, were whitiſh: the whole liver was hard: but the ſpleen, except that it was ſomewhat enlarg'd, was, in other reſpects, ſound. The lymphæducts were not turgid, as is ſometimes obſerv'd in dropſical bodies, when the viſcera are ſound.

The cavity of the thorax, on the right ſide, overflow'd with water. There-

(*t*) Epiſt. 20. n. 25. & alibi.

in,

in, alſo, the lungs had grown hard: and on the whole of the ſurfaces, by which this lobe was turn'd to the diaphragm, and mediaſtinum, did it adhere to theſe parts. In the pericardium was little or no ſerum. In all the veſſels, even in thoſe of the viſcera, the blood was fluid.

17. Why this patient ſhould lie on his right ſide, you immediately perceive, as ſoon as you conſider that the quantity of water, which was in the ſame ſide, muſt of courſe have oppreſs'd, and ſuffocated, the other lobe of the lungs that was ſound, had he chang'd his poſture. But how did it happen that the woman (*u*), who had water in the left cavity of her thorax, could not lie down on her left ſide? Without doubt it is neceſſary for you to conſider the ſtate of the lungs, the left lobe of which was ſound in the woman; and the right in the young man, diſeas'd. Yet how was it that the woman could not lie on her back? For in this poſture, neither ſide would have injur'd the other, either by its weight of water, or by the bulk of the lungs, which had been attack'd with the phlegmon. The old man (*x*), at leaſt, though he had both lobes of the lungs ſo connected all round, and, at the ſame time, preſs'd upon in the whole of their circumference, by water collected in the ſurrounding interſtices, not only was able to lie on his back, but was under a neceſſity of lying in that poſture.

You ſee, then, why I ſaid that theſe circumſtances, of lying in different poſtures, are ſometimes not eaſily to be accounted for. But it is better not to ſay any more of this ſubject, at preſent, and to ſubjoin the other obſervations of Valſalva, wherein he did not ſee the turgid ſtate of the lymphæducts, join'd with the dropſy, which you might have, alſo, remark'd, in the two hiſtories juſt now deſcrib'd: although I ſuppoſe it did not appear very plain to you, or to me, why he ſaid, in the laſt, that this turgeſcency is ſometimes obſerv'd in hydropic bodies, when the viſcera are ſound: which he certainly could not refer to the old woman (*y*), to the man (*z*), to the other old woman (*a*), or to the old man (*b*), in whoſe bodies, although there was this turgeſcency, yet the viſcera were not ſound nevertheleſs.

He muſt, of courſe, then, have had an eye to other obſervations of his, as, for inſtance, that which I have already deſcrib'd to you (*c*), in which, when all the abdominal viſcera of an hydropic body were in a healthy condition, the lymphatic veſſels were turgid at the ſame time: and perhaps he meant nothing elſe here, than that theſe veſſels were, ſometimes, found to be turgid, even in thoſe dropſical bodies, whoſe abdominal viſcera are ſound.

18. A young man of about eight and twenty years of age, being much given to eating and drinking, and having labour'd, for ſome years, under a difficulty of reſpiration, fell, at length, into a univerſal dropſy. To this was added, about ſeven days before death, a very conſiderable difficulty of breathing, with a cough, ſpitting, and pain in the thorax.

In the carcaſe, the belly, and thorax, were found to be full of a browniſh ſerum, and all the viſcera, except the inteſtines and the ſtomach, ting'd of the ſame colour. This laſt mention'd viſcus vaſtly exceeded the bounds of its

(*u*) N. 15.
(*x*) N. 13.
(*y*) N. 6.
(*z*) N. 10.
(*a*) N. 12.
(*b*) N. 13.
(*c*) Epiſt. 16. n. 4.

natural

natural magnitude. The ſpleen alſo was enlarg'd, three times more than it ought to be. The bile was of a pale colour. None of the lymphæducts came into view.

The left lobe of the lungs was very much inflam'd; from whence death was juſtly ſuppos'd to have been accelerated; and was found to be connected to the pleura by membranes, in the interſtices of which the ſerum, that I have deſcrib'd, was confin'd.

19. That by the force of hypotheſis, rather than by the authority of Hippocrates, or the diſſection of dropſical bodies, moſt phyſicians were formerly induc'd to believe the liver firſt, and after that the ſpleen, to be the cauſe of dropſy, you will learn even from the Sepulchretum; either in the place where it is ſhown (*d*), that in the books of Hippocrates, not any one, or two, viſcera are ſuppos'd to be in fault, but many, or where (*e*) many examinations of the viſcera of dropſical bodies being produc'd, both of theſe viſcera are, demonſtratively, clear'd from the charge. And, certainly, whatever part, or whatever cauſe, can, for a conſiderable time, retard the motion of the blood, or lymph, or immoderately increaſe the ſecretion of the moiſture, with which all the cavities of the body are furniſh'd; or, in ſhort, prevent, or diminiſh, by any means, its abſorption, may give origin to this diſorder.

But the belly, beſides theſe viſcera, has peculiar parts, from which a humour is ſometimes pour'd out, into its cavity. There was, ſays Piccolhominus (*f*), a man who drinking a great quantity, and diſcharging no urine, even by the introduction of the catheter, had his belly ſwell'd to a ſurprizing degree, and having at length died, ſhow'd his kidnies to be entirely lacerated with calculi, ſo that it was manifeſt the urine had flow'd out of theſe viſcera, into the belly, and had diſtended it.

In the Sepulchretum, where I have look'd for this obſervation of Piccolhominus to no purpoſe, you have others of Platerus (*g*), and Dodonæus (*h*), of an aſcites, that did not owe its origin to the liver, or ſpleen, which were ſound, but to the urine having flow'd out of the kidney, or the bladder, which had been perforated by exulceration. And as to what is hinted, beſides, by Dodonæus (*i*), it is by no means doubtful, but the ſame thing muſt happen, if the ureters ſhould chance to be burſt, or eroded; and it is even hinted by Galen (*k*), and confirm'd, among others, by Euſtachius (*l*), that if theſe tubes are cut into, in a living beaſt, and the abdomen ſew'd up again, the cavity of the belly would be found "entirely full of urine, as if "the animal labour'd under a dropſy:" and that the ſame thing had happen'd in two men, from the rupture of theſe canals, the hiſtories of Abraham Vater (*m*), and Winhart (*n*), teach us.

To this claſs of obſervations, that of the celebrated Bernerus (*o*) muſt be refer'd, which was made upon a boy of ſix years old, whoſe urine, not being able to get out from the kidnies, had ſo diſtended them, that having open'd

(*d*) Sect. hac 21. Schol. ad §. 4. obſ. 7.
(*e*) Sect. ead. obſ. 1. & ſeq.
(*f*) L. 2. anat. præl. 23.
(*g*) Sect. cit. obſ. 8. §. 2.
(*h*) Ibid. obſ. 25. §. 23.
(*i*) Ibid.
(*k*) De natural. facult. l. 1. c. 13.
(*l*) Tract. de ren. c. ult.
(*m*) In progr. edito Witemberg. Januar. a. 1720.
(*n*) In append. tom. 2. act. n. c. ſub. n. iii.
(*o*) Eorund. actor. t. 1. obſ. 219.

a way for itſelf, through their ſurfaces, it diſtill'd into the cavity of the belly, and ſurrounded the inteſtines. And, indeed, to this claſs alſo, belong ulcers perforating the ſtomach, in ſuch a part, that by affording an exit for liquids, rather than for ſolids, they may either generate or increaſe an aſcites. Thus it happen'd in the obſervations of the learned men Samuel Gratſius (*p*), Ad. Chriſt. Thebeſius (*q*), Rud. Jac. Camerarius (*r*), and Jo. Georg. Hoyerus (*s*).

Moreover, to thoſe examples which are pointed out from the Sepulchretum, of the liver, and ſpleen, being without diſorder, in dropſical bodies, new examples that might be added are not wanting. Turn, for inſtance, as you may to others, and among them, to that which I juſt now mention'd of Vaterus; for it relates to this queſtion alſo, and indeed chiefly; turn, I ſay, to thoſe which are ſupplied by the Cæſarean Academy (*t*), among which is one in particular (*u*), wherein every body would, the more naturally, have ſuppos'd the liver to be affected with a very conſiderable diſeaſe, becauſe the patient had complain'd of nothing more than of a pain in that viſcus. Yet in this viſcus, and in the gall-bladder, was no mark of diſeaſe; but in the neighbouring part of the meſentery was found an eroſion, ſo conſiderable as to equal the breadth of a ſpan.

However, notwithſtanding the truth of all theſe things, there was no reaſon, why ſome perſons ſhould run ſo much to the contrary ſide of the argument, as to contend that the liver, and ſpleen, were very rarely, if ever, to be blam'd. You will read, for example's ſake, in one of the laſt foregoing ſections of the Sepulchretum (*x*), "that nothing is more common, among the "generality of phyſicians, than to heap up reproaches upon the ſpleen, as "if it were the *pancrene*, or univerſal fountain, of almoſt all diſeaſes." And that they err'd in this we muſt certainly confeſs. Yet when it is immediately added, "that nothing is more rare than for thoſe who examine the viſcera "after death, to detect any diſorder in the ſpleen;" if this be underſtood by any one, in a general ſenſe, or in particular, as in an aſcites, how diſtant it is from truth, will be ſhown, not only by the great number of obſervations in the Sepulchretum itſelf (*y*), but alſo by five (*z*), out of the nine, which I produc'd from Valſalva, wherein it was found either to be very hard, or larger than its natural ſize, or even, as in the laſt, from whence I took occaſion to write theſe things, three times as large as its natural magnitude. But if the queſtion be of the liver, you will ſee that, in four of them, it was either pale, or ſpotted, or black, or quite hard, or that it was pallid, together with the bile. Nor is it to be wonder'd at, if the diſeaſe, which, as I have already ſaid, ariſes from a retarded motion of the blood, ſhould, not uncommonly, proceed from a diſorder of the viſcera, through which the blood is carried ſlowly, and gently, by the intention of nature itſelf; ſo that if any new retarding cauſe be added, it cannot be mov'd but with the greateſt

(*p*) Eph. n. c. dec. 3. a. 3. obſ. 40.
(*q*) & cent. 3 & 4. obſ. 120.
(*r*) & cent. 5. obſ. 43.
(*s*) & actor. t. 4. obſ. 124.
(*t*) Dec. 3. a. 5 & 6. obſ. 13. & 168. & a. 6 & 8. obſ. 186.
(*u*) Obſ. ead. 186.
(*x*) Sect. 18. obſ. 3.
(*y*) Vid. quot ſub obſ. 6 & 7. & alibi congerantur.
(*z*) N. 6. 10. 13. 16. 18.

ſlowneſs.

ſlowneſs. Therefore, many obſervations are to be met with, in different authors, which you may join to thoſe of Valſalva, and thoſe extant in the Sepulchretum; and ſo many they are, that when I ſhall have pointed out to you a conſiderable number, you may take it for granted that many are ſtill remaining, in other places. See, for example's ſake, what the younger du Verney (*a*) found by diſſection, in two virgins that had an aſcites, and, in like manner, in a great number of bodies affected with the ſame diſeaſe, by the *Naturæ Curioſi* (*b*): nor paſs by the appearances found by Bechmann (*c*), in an illuſtrious man.

Out of all theſe diſſections, of bodies that had labour'd under an aſcites, you will not read ſo much as one, but you will find that the liver was diſeas'd. And you will, at the ſame time, find it particularly remark'd, in ſome of them, that the ſpleen was, alſo, preternaturally affected. Nor are others wanting, from which you may perceive, that, although in this diſorder "the "liver was not much alter'd from its natural ſtate, the ſpleen was, never-"theleſs, enlarg'd, and ſomewhat hard," or that when the liver was "quite "in a natural ſtate, the ſpleen was larger than uſual, univerſally ſcirrhous, "and ſo hard, that it could not be cut into, and divided, by the help of a "razor, without difficulty." One of which examples is from Lentilius (*d*), and the other from the celebrated Cohauſenius (*e*).

Yet I do not doubt but the diſorders, which were not in theſe viſcera, or in the pancreas, meſentery, or other parts ſhut up in the belly, in the beginning of the aſcites, may, ſometimes, be brought on, by the dropſy being long protracted. But there are, frequently, marks that theſe diſorders had preceded, whether we conſider all the bad ſymptoms, with which the patient was affected, before the dropſy; or ſome things are attended to, which occur in the diſſection of bodies, as the next hiſtory will demonſtrate.

20. A woman had labour'd under an aſcites. During the diſſection of the body, none of the cavities was found full of water, but that of the abdomen. The inteſtines were not diſtended with air. The liver was hard, and the gall-bladder contain'd a ſtone, which occupied the whole of its cavity. The lymphæducts did not at all appear.

21. This is one of the other obſervations of Valſalva, which I promis'd you in the former letter (*f*), in order, the more fully, to convince you, that the jaundice had no more been obſerv'd by him, than by me, to be join'd with cyſtic calculi. Moreover, it is but little probable, that ſo large a ſtone had not been begun a long time before, ſo as to arrive at ſuch a magnitude, as to fill the whole cavity of the cyſt: and, conſequently, that the liver, in which bile had been for ſo long a time ſecreted, that was proper for the generation of ſuch a calculus, had not been without diſeaſe. But as to its being expreſly ſaid that the inteſtines were not diſtended with air, that was done for

(*a*) Mem. de l'acad. r. des ſc. a. 1701 & 1703.

(*b*) Dec. 3. a. 5. & 6. obſ. 276. & a. 7 & 8. obſ. 153. & a. 9 & 10. obſ. 239. 241. 248. & cent. 1. obſ. 3. in coroll. 3. & cent. 3. obſ. 12. & cent. 8. obſ. 27. & cent. 9. obſ. 64. & cent. 10. obſ. 86. & act. tom. 6. obſ. 15.

(*c*) Commerc. litter. a. 1742. hebd. 32. n. 1.

(*d*) Eph. n. c. cent. 1 & 2. obſ. 168.

(*e*) Commerc. litter. a. 1743. hebd. 25. n. 2. caſ. 3.

(*f*) N. 25.

this purpoſe, I mean to ſhow that, although the aſcites and tympanites may be join'd together, this does not, nevertheleſs, always happen, as ſome ſeem to believe. And, indeed, as it more rarely happens that an aſcites, as in the woman at preſent ſpoken of, has no dropſy of any other cavity join'd with it, ſo it happens leſs often, that the ſtomach and inteſtines are diſtended with a great quantity of air, in an aſcites; and that in tympanitic bodies, a great deal of water, in particular, eſpecially when the diſeaſe is not yet inveterate, is found to be extravaſated into the belly. And you will ſee that there was very little in the woman of whom I ſhall immediately ſpeak.

22. A woman about thirty years of age, was ſeiz'd with a great and moiſt ſcabies, after long-continu'd pains of the limbs. In order to drive this away, ſhe, by the advice of an empiric, made uſe of a certain ointment. And by this means her ſcabies was dried up in a very ſhort time indeed: but an acute fever aroſe, attended with a great heat, and thirſt, and very ſevere pains of the head. To theſe ſymptoms were afterwards added a delirium, a conſiderable difficulty of breathing, a ſlight tumour of the whole body, but not a ſlight one of the belly, great uneaſineſs, and, finally, death on the ſixth day from her having taken to her bed.

In the diſſection of the body, it was obſerv'd that when an inciſion was made into the ſkin, and muſcular fleſh, no watry humour iſſued forth, ſo that it was evident the univerſal tumour of which I have ſpoken, was not of the œdematous, or anaſarcous kind: and this was alſo confirm'd by preſſing the feet with the finger, which left no traces of impreſſion behind it.

The belly, alſo, was tumid, and very tenſe: yet when it was open'd, not water, but the inteſtines, and ſtomach, burſt forth, which contain'd nothing but air; wherewith they were diſtended to ſuch a degree, that the ſtomach fill'd more than half of the cavity of the belly. Yet into this cavity, a limpid ſerum was found to be extravaſated, to the quantity of a pint or two: which, at firſt, ſeem'd to concrete ſlightly from the application of fire; but afterwards, almoſt like the water of the pericardium, evaporated wholly, except that in the bottom of the veſſel, it left a kind of yellow pellicle.

In the thorax, the lungs were found to be annexed to the pleura, by a kind of membranes as it were, that reſembled a gelatinous body: and theſe were ſo many in number, that it appear'd as if the lungs could not have dilated themſelves, ſo freely as is natural. If you cut into them, a pellucid humour iſſued forth. The heart, on the right ſide, was connected to the pericardium, by ſome membranous fibres: in the ventricles was a fluid blood; yet in the right, was obſerv'd the beginning of a thin polypous concretion. The head it was not in our power to open.

23. The very great and humid ſcabies, which had freed this woman from long-continu'd pains in her limbs, being improperly repell'd, brought on death. That is to ſay, the acrid particles which had been accuſtom'd, before, to prick and vellicate the membranes of the limbs, were now ſalubriouſly thrown out, by means of little ulcers produc'd on the ſkin. But when theſe ulcers were dried up, thoſe particles, of courſe, remain'd in the blood, and irritated the internal parts; and thus brought on the acute fever, and the other very violent diſorders which accompanied it, and among theſe the tympanites. Which ſpecies of dropſy, for ſo the ancients call'd it, although

though it generally ſucceeds to long diſeaſes, as Littre ſays (*g*), is nevertheleſs ſometimes brought on in an acute diſorder, as this was; and even in thoſe that are ſtill more acute, as I myſelf have ſeen, and ſhall relate to you on a future occaſion.

After very violent and long-continu'd diſorders, it is natural to conceive with him, that from an effete and impoveriſh'd blood, ſo great a number of ſpirits cannot be produc'd, nor of ſuch a kind, as are neceſſary to keep up that ſpring and tenſion of fibre, requir'd in the ſtomach and inteſtines, in order to reſiſt, ſufficiently, the force of the air, in both of their cavities; eſpecially if it be much rarefied, and in great quantity; and prevent the parietes of theſe viſcera from being diſtended, in an incredible manner. But in this acute diſeaſe, the air was certainly prone to rarefaction; ſo that even in the veſſels, which were under the ſkin, and through which it, perhaps, paſs'd with leſs freedom, it ſeem'd, in ſome meaſure, to expand itſelf, and bring on a kind of ſlight emphyſema.

Yet ſhall we ſuppoſe that the blood might be render'd effete, and, conſequently, that the coats of theſe viſcera were render'd weak, if not by the long-continuance, at leaſt by the vehemence, of the diſorder? Although, as it was, in this caſe, attended with very ſevere pains of the head, with anxiety, and delirium, a ſcarcity, and languor, of ſpirits were not ſo much to be argu'd from thence, as plenty, and irregular motions, thereof. Nor ſhall I, for this reaſon, go over to the opinion of Willis, related at large even in the Sepulchretum (*h*), who, in diametrical oppoſition to the ſucceeding judgment of Littre, accounted for the diſtention of the coats of theſe viſcera, in a tympany, from a copious and irregular influx of ſpirits into their fibres; as if the fibres, that are diſpos'd around membranous tubes, when they are inflated, would not rather conſtringe the tubular cavities, and reſiſt diſtention.

I confeſs, I think it will be better to follow a third opinion, in this caſe, which is made up, as it were, of the two others, and ſuppoſe that the fibres, being contracted here and there, by an irregular influx of ſpirits, and conſtricted by a convulſion, had intercepted the natural motions of theſe tubes; and conſequently prevented the expulſion of the copious and much-rarefied air: and that the air, for this reaſon, urging the other fibres, in thoſe tracts wherein it was confin'd, ſo much the more in proportion, as it was the more increas'd in quantity, and in power, firſt overcame the reſiſtance of theſe fibres, and afterwards of thoſe whoſe ſtrength had been left broken, and diminiſh'd, by the force of the convulſion; and by this means, at length, weakening and relaxing all the fibres, univerſally dilated theſe tubes. And that the fleſhy fibres of the inteſtines may be ſo convuls'd, as to prevent all exit to the intercepted air, the very cloſe contractions of the inteſtines, which are frequently met with, here and there, in diſſections, plainly demonſtrate.

Many obſervators tell us, "ſays the celebrated Corn. Henr. Velſe (*i*)," and I have frequently ſeen, in bodies after death, "that when the inteſtine "is in one part lax, ſoft, diſtendible, and flaccid, it is in another place,

(*g*) Mem. de l'acad. r. des ſc. a. 1713.
(*h*) Sect. hac 21. in ſchol. ad obſ. 22.
(*i*) Diſp. de mutuo inteſt. ingreſſ. p. 1. §. 14.

"hard,

" hard, contracted, and rugous, ſo that it could not be more cloſely ſhut " up, and ſtreighten'd by the compreſſion of the hand, and would not ad- " mit any fluids to paſs through it, but nearly reſembled a ſolid maſs of " fleſh." And after having ſaid that theſe coarctations " were ſometimes " alternate, through the whole tract of the inteſtinal canal," as he ſaw in the body of an infant, he proves by his own obſervation (*k*), which is as follows, what elaſtic air, when ſhut up, and more and more expanded, by reaſon of the heat of the place wherein it is confin'd, can effect. His words are, " I ſaw in the body of a girl of two years old, a portion of the inteſ- " tinum colon ſo exceedingly enlarg'd, by the included air, that it reſembled " a bladder conſiſting of coats, which, on account of their great elongation, " and diſtention, were extremely pellucid, the remaining tract of the ſame " inteſtine, both above and below this tumour, being externally furrow'd by " this very great contraction, and altogether impervious."

To this I would likewiſe have you add the equally impervious contraction, which was ſeen by the excellent Baſius (*l*), between the upper and lower parts of the colon, in the body of a man, which parts were greatly diſtended with air. And that when conſtrictions of this kind are relax'd, as of courſe happens in thoſe who are to recover from their diſeaſes, the fibres are now conſequently become very weak, under ſo great a preſſure, I have no need to inculcate upon you: nor yet that thoſe certain tracts, in which there had been either conſtriction or air, would be inſtantly expanded with the whole force, and ſpring, of this elaſtic fluid; and that ſo much the more, in proportion as theſe conſtrictions have been ſtronger, or continu'd for a greater length of time.

You, therefore, will not wonder, if in the obſervation of Laubius (*m*), the ſtomach was corrugated, but the colon diſtended to ſuch a degree, " that a " very robuſt and muſcular man could eaſily have thruſt in his whole arm," or that Littre (*n*) often ſaw the cæcum, and the colon, of the thickneſs of a man's thigh, and that Platerus (*o*), even in a boy, ſaw inteſtines which ſeem'd, " in ſome places, to be equal to" the ſame thickneſs. On the contrary, there is, at other times (*p*), ſo very great a diſtention of the ſtomach, beyond that of the inteſtines, as not only to be ſuppos'd to have forc'd the contiguous part of the liver, and the diaphragm, much higher than their natural ſituation, but alſo to have prevented the deſcent of the latter; and ſometimes to have thrown the patient into ſuch imminent danger, for this reaſon, as to require an inſtantaneous, and hitherto unthought of, remedy: ſo that an exit might be immediately contriv'd for the air, by means of thruſting down an oblong needle, through the left hypochondrium, into the ſtomach. But of this below (*q*).

However you might have obſerv'd, in reſpect to the woman deſcrib'd by Valſalva (*r*), how much the ſtomach was diſtended. From whence I have taken occaſion to explain the tympanites in certain caſes, not without previous convulſive conſtrictions. But if you ſhould chooſe rather to make uſe

(*k*) Ibid. §. 15.
(*l*) Dec. 3. obſ. anat. 9.
(*m*) Act. n. c. tom. 2. obſ. 20.
(*n*) Mem. cit.
(*o*) Sect. hac Sepulchr. 21. obſ. 22. §. 4.
(*p*) Act. cit. tom. 1. obſ. 49. cum ſchol.
(*q*) N. 25.
(*r*) N. 22.

of

of the explication of Littre, in all theſe caſes, I ſhall be the leſs repugnant to your determination, as in the progreſs of all we muſt, nevertheleſs, return to this, if what I juſt now ſaid be really juſt and true.

24. And thus the cauſes of a tympanites, both after a chronic, and in an acute diſeaſe, will be underſtood, when the quantity of rarefied air, and its expanſive force, ſhall diſtend the inteſtines, and ſtomach, and conſequently the abdomen, which lies in appoſition therewith. But there is, alſo, another ſpecies of tympany, when the ſame air, being rarefied, on the outſide of the cavity of theſe viſcera, extends the abdomen itſelf only. And the muſcles of the abdomen, which were even created for this purpoſe, among others; that while every thing is in a natural ſtate, theſe viſcera might not be diſtended beyond meaſure; are ſo far from reſiſting their diſtention, when they are more lax than they ought to be, from any cauſe whatever, that it even appears reaſonable to number them among the cauſes of this diſtention being very conſiderable, and happening very eaſily. But when the air, on the outſide of theſe viſcera, ſhall urge the lax abdomen, this will be ſo much the ſooner, and ſo much the more, extended in proportion, as it will have no reſiſtance to its force, from the parietes of the inteſtines and ſtomach, but only from the parietes of the abdomen itſelf.

Yet this ſpecies of tympany is not frequent, either when alone, or join'd with the former; but is even ſo rare, that neither Willis (*s*), nor Littre (*t*), have ſeen it: and the firſt has even ſaid that he could not conceive of it, and the other that it was entirely refuted by his experiments. I, however, would neither deny the truth of any thing, becauſe it could not be properly conceiv'd of, nor would ſuppoſe that what does not happen in many, cannot happen in ſome: and perhaps the opinion of theſe excellent men was nearly the ſame, only not ſufficiently explain'd. Yet others do not doubt, that from humours extravaſated in the belly, and there corrupted, air may diſengage itſelf, eſpecially in thoſe bodies wherein, from the effect of diſeaſe, it is not well " and intimately mix'd with the humours," or, in like manner, from any corrupted viſcus; or finally (which is the moſt eaſy of all) that it may iſſue from the inteſtines, which are perforated in ſome part or other of their tube.

And I ſaid that this method was the moſt eaſy, becauſe the celebrated Haller (*u*) obſerv'd in inteſtines, extremely diſtended by the force of this diſeaſe, that the air had made a paſſage for itſelf through their parietes, quite into the cells which are ſituated under the external coat: and, indeed, I remember that the celebrated Spoeringius, in the commentaries of the Royal Academy of Sciences in Sweden, I think, in the year 1742 (for when I wrote this letter the book was not in my hands) has ſaid, that in a man, whoſe inteſtine colon was full of excrements, the air had ſo far expanded the cavity, above this obſtacle, that by the force exerted upon its membranes, it was no longer contain'd in any of them, but the external; ſo that it is eaſy to conceive, how little yet remain'd, to prevent it from burſting forth quite into the cavity of the belly, from that of the inteſtine.

(*s*)

(*t*) Locis indicatis n. 23.

(*u*) Opuſc. pathol. obſ. 26.

Yet not only the air, but eroſion alſo, or gangrene, by perforating the inteſtines, may give an exit to the flatus, as they have more than once done, from the ſtomach. Thus in the two obſervations, which are mention'd above (*x*), of Camerarius, and Hoyerus, it is not at all ſurprizing that, as the ſtomach had been perforated, no ſooner was a ſlight inciſion made upon the tumid abdomen, but firſt of all the flatus burſt forth with an exploſion, and putrid ſmell. Yet that the ſame thing may happen, even when the inteſtines are not pierc'd through, other obſervations ſhow; whether they are affected with a gangrene, as in the writings of Mead (*y*); or whether they incline to a gangrenous ſtate, and at the ſame time are externally cover'd over with a deprav'd humour, and internally turgid with flatus, as in the writings of the celebrated Gullman (*z*); or whether there be nothing of this kind, except that they, and the ſtomach, are both of them inflated to a very violent degree, as obſerv'd by Mercklinus (*a*); or, finally, not even this is the caſe, but the inteſtines "are juſt in the ſame ſtate as thoſe of a healthy "perſon," as is remark'd by the celebrated Heiſter (*b*).

But in theſe two caſes, and in other caſes of the ſame kind, if any other chance to occur, by what paſſages ſhall we ſay that the air came into the cavity of the belly? It muſt be confeſs'd, that there may be ſome other different paſſages, at different times, which we are not, at preſent, acquainted with. But yet, as we, ſometimes, ſee certain flatulent tumours in the viſcera, why cannot the air be collected together, in the cavity of the belly as it is elſewhere? The gall-bladder, for inſtance, was found very turgid with air by Jo. Bapt. Fantonus (*c*), in conſequence of that fluid being ſhut up under the external coat; and his celebrated ſon (*d*) has, more than once, ſeen, as others have alſo, almoſt innumerable little veſicles of different ſizes, under the external membranes of the liver, ſpleen, and, in particular, of the meſentery: and he conjectur'd that, as water continuing to diſtill from ruptur'd hydatids, into the belly, make an aſcites, ſo air burſting forth from theſe ruptur'd bubbles, if it does not ceaſe to ruſh into the abdominal cavity, upon its ſeparation from the blood, will bring on a tympanites.

Yet if we even could not underſtand the cauſes of this effect, the effect itſelf certainly could not be denied. For he affirms that he had ſeen juſt the ſame thing in a young woman, as Ballonius ſaw in a girl (*e*), I mean that the tumefied abdomen being prick'd after death, had entirely ſubſided with an exploſion. And that the ſame thing as happen'd to Ballonius, had happen'd to others alſo, and among theſe to Valleſius, you will learn from the Sepulchretum itſelf (*f*); and, at the ſame time, who found air in the cavity of the abdomen, when the inteſtines were diſtended therewith (*g*), or when water was effus'd into the belly: and whom you may add to theſe you ſufficiently perceive, from the later obſervations that I have juſt now mention'd.

(*x*) N. 19.
(*y*) Monit. med. c. 8.
(*z*) Eph. n. c. cent. 7. obſ. 89.
(*a*) Earund. dec 3. a. 3. obſ. 142.
(*b*) Earund. cent. 5. obſ. 84.
(*c*) Obſ. med. 18.
(*d*) In ſchol. ad eam, ult. edit.
(*e*) Hic in Sepulchr. obſ. 23. §. 2.
(*f*) Ibid. §. 1.
(*g*) Ibid. obſ. 22. §. 4. & in additam. obſ. 75.

25. And leſt you ſhould ſuſpect theſe things to have happen'd, becauſe ſome inteſtine was prick'd, together with the peritonæum, as by their diſtention they were quite in contact therewith, and become very thin in their parietes, attend to theſe circumſtances; that where there was an aſcites at the ſame time, water was, of courſe, interpos'd betwixt the peritonæum, and inteſtines; and that where there was no aſcites, it would be difficult to be done, without ſome marks of a perforation in the inteſtine being diſcover'd then, or afterwards; none of which, when it happen'd to me, at any time, to obſerve the ſame thing, I could find out, by the moſt accurate attention. To this add, that many of the obſervations, in the Sepulchretum (*i*), will teach us, and reaſon itſelf will confirm, that upon ſlightly perforating an inteſtine, the air, indeed, which is neareſt to the foramen, burſts out, but that the air which is at a diſtance, and diſtends the remainder of the inteſtines, either does not immediately come out, or if it does ſoon iſſue forth, does not, however, eſcape with ſuch celerity, that the ſubſiding of the whole belly ſhould ſeem to be the conſequence, in one inſtant of time, in the ſame manner as happens in the exploſion of a bladder; and as, from the due conſideration of the words of thoſe great men, whom I juſt now commended (*k*), you will readily acknowledge that it was ſeen to do by them.

Or if you do not grant this, and will, abſolutely, contend that at the very point of time, in which any inteſtine is ſlightly punctur'd, all the air ruſhes out of the inteſtines; tell me then, I beſeech you, how it could happen, that Gullmannus (*l*) ſaw them, ſoon after, turgid with flatus, or how that Mercklinus (*m*) (after the air had burſt forth from the abdomen, when but ſlightly punctur'd, and this "had immediately ſubſided) ſaw, on examining the "viſcera, the ſtomach, together with all the inteſtines, immenſely diſtended "with air, like the moſt inflated bladder."

To this add the obſervation given by Heiſter (*n*), in order "to decide this controverſy. In a woman who "had the abdomen extremely diſtended, and "who died ſuddenly," the ſame thing happen'd which I have ſaid was ſeen by Mercklin, "as ſoon as ever a very ſmall wound had perforated the "peritonæum;" but the inteſtines were not found to be expanded with air; and this was even the body, in which "the inteſtines were juſt in the ſame "ſtate, as thoſe of a healthy perſon. I will not here ſay, that if they had been previouſly diſtended, to ſuch a degree, by the included flatus, ſome of them would certainly have retain'd the marks of this diſtention, whether you conſider'd their thickneſs or their ſituation. But this one thing I will ſay, that as ſo many phyſicians, and ſurgeons, of Amſterdam were preſent, and amongſt them that very great anatomiſt Ruyſch, beſides Heiſter himſelf, who was a young man indeed, but even then excellent in the ſame art, I cannot be perſuaded to believe, that if any thing, beyond the peritonæum, had been cut into, ſome one or other of them would not have immediately found it out.

I ſuppoſe you ſcarcely expect here, that in theſe, and other obſervations of this kind, made by the moſt celebrated authors, another ſuſpicion ſhould be

(*i*) Obſ. 75. cit. & obſ. 22. §. 2. & cæt.
(*k*) N. 24. ad fin.
(*l*)
(*m*) N. eod.
(*n*) Ibid.

obviated, I mean that the air with which the abdomen was diſtended, had, at length, been extravaſated into the cavity of the belly after death; for the tumour of the belly, in thoſe we ſpeak of, had exiſted long before, while they were living. And that thoſe veſicles fill'd with air, which I have taken notice of with Fantonus (*o*), might even exiſt in the living bodies, the flatulent external tumours, which are acknowledg'd by moſt ſurgeons, in the ſcrotum of diſeas'd bodies, while living, and in other parts, and were formerly number'd by Gorgeas, among umbilical herniæ, as you will read in Celſus (*p*), will ſufficiently teach us.

It does not eſcape me, what doubt there may be in the laſt place. But I do not at all doubt, that from a ſmall quantity of humour, ſtagnating betwixt coats, a great quantity of rarefied air may ſometimes extricate itſelf: and when I reſided at Venice, either every thing deceiv'd me, and not only me, but the moſt experienc'd ſurgeons, and phyſicians, or a tumour, which was not narrow in its circular circumference, and had form'd itſelf under the common integuments of the abdomen, in a certain barber, and which I afterwards ſaw perfectly heal'd, was made by included air. Nor do I eaſily ſee how I could explain thoſe tumours, which that celebrated man, Daniel Hoffman (*q*), obſerv'd, in the day time, in a certain lying-in-woman, running about under the very ſurface of the abdomen, of various ſizes, and dilating themſelves with a noiſe, but diſappearing about evening, and that for ſome weeks together. But I know for a certainty, that the inflation which the younger du Verney (*r*) ſaw in the laſt diſorder of a girl, increaſing with an undulating appearance, till it at length occupied the whole trunk of the body, and, as you preſs'd it, giving the ſenſation of air, as it were, under the finger, moving away with a kind of crackling; this, I ſay, I know, for a certainty, to have been from air expanding itſelf under the ſkin; for ſcarcely was the ſkin of the abdomen cut into, but an intolerable ſtench burſt forth, and thus the whole tumour vaniſh'd.

Yet I would have you, as to what relates to windy tumours, read over thoſe things that are publiſh'd on their production, by Littre, in the hiſtory of the Royal Academy of Sciences at Paris (*s*). And in the commentaries of the ſame academy (*t*), you will find ſome things propos'd by the younger du Verney, in order to diſtinguiſh the ſecond ſpecies of tympany, which is ſometimes join'd with an aſcites; and, at the ſame time, to prevent us either from pronouncing a tumour of the abdomen to be an aſcites, rather than the firſt ſpecies of tympany, on account of ſome ſimilitude of fluctuation; or, on the other hand, from denying it to be an aſcites, becauſe there is no ſenſe of fluctuation: and ſome of our obſervations may, alſo, ſerve to make you cautious in this reſpect (*u*). And that very excellent phyſician Werlhofius (*x*) has given ſome uſeful hints on theſe ſubjects, ſhowing how the tympanites, eſpecially when it has become inveterate, does not exclude a ſenſe of weight.

But in regard to the method of cure, when you read that a tympanitical inflation of the abdomen, which had already continu'd eight years, was re-

(*o*) Ibid.
(*p*) De medic. l. 7. c. 14.
(*q*) Commerc. litter. a. 1737. hebd. 11.
(*r*) Mem. de l'acad. r. des ic. a. 1704.
(*s*) A. 1714.
(*t*) A. 1703.
(*u*) N. 30.
(*x*) Commerc. litter. a. 1735. hebd. 36. n. 4.

mov'd,

mov'd, merely by taking away a large quantity of blood, from the foot, by the celebrated Michael Adolphus (*y*), who confeſſes "that it was not from "flatus," you will judge, from what then, it did ariſe. And how difficult it is to cure either ſpecies of the tympanites, that is really flatulent, nothing more clearly ſhows than the remedy, which men of eminence have been under a neceſſity of deviſing, I mean the paracenteſis. But not one of the more cautious ſurgeons has yet been found, that I know of, who was willing to thruſt a perforating inſtrument into the abdomen, without knowing what parts he might wound. In the number of theſe cautious ſurgeons he certainly was not, who, having formerly miſtaken a tympany for an aſcites, and having under the inſpection of Van Helmont (*z*), who was then a young man, perforated the abdomen, in vain expected the exit of the waters. For "having "withdrawn the trocar, the abdomen immediately ſubſided, and the patient "periſh'd ſoon after: and the flatus, which was diſcharg'd, was exceedingly "offenſive, and of a cadaverous ſmell." And although the body of the patient was not diſſected after death, yet nothing can more eaſily happen, than that upon drawing out the needle, the air ruſhing forth, may ſometimes bring on a ſlight alleviation; but then nothing can more eaſily happen, likewiſe, than that, ſoon after, other things, alſo, may come out of the inteſtines, and flowing down into the belly, ſpeedily bring on a fatal diſorder in the viſcera.

And what will you ſay to this? That the needle might be fix'd into that part of the inteſtine, wherein, though there was ſuppos'd to be the greateſt quantity of air, on account of the very great diſtention, yet there was, in fact, the leaſt; for a great quantity of air is not always in the inteſtines of tympanitic patients, and but little matter, and this for the moſt part viſcid, as it happen'd to Littre (*a*) to obſerve. For the younger du Verney (*b*), on the other hand, found the inteſtines half full of matter: and the celebrated Leonhardus Hurterus (*c*), having wonder'd that in a tympanitic boy, the large inteſtines, in particular, were ſo diſtended, that the colon had diſlodg'd the liver, in ſome meaſure, from its uſual ſituation, and driven it to the left ſide, found, within the cavity, a ſufficient quantity of matter, to produce this effect; this matter being very thick, ſpumeſcent, and of a white colour, degenerating to yellow: which is a circumſtance chiefly to be conjectur'd, in a diſorder that is attended with a coſtiveneſs, when the patients have either taken in a great quantity of food, before the diſorder began, or have gone on to take it in a conſiderable quantity, after it has begun.

But what danger there might be in perforating the abdomen, in order to cure the other ſpecies of tympany, if the firſt ſpecies ſhould happen to be join'd with it, or the firſt ſhould be taken for the ſecond; and it is very difficult to diſtinguiſh one from the other; you underſtand from thoſe things which have been juſt now ſaid.

Yet of this, and of the general method of cure, in a tympany, and of diſ-

(*y*) Act. n. c. tom. 1. obſ. 244.
(*z*) Ignot. hydrop. n. 44.
(*a*) Mem. de l'acad. r. des ſc. a. 1713.
(*b*) A. 1703.
(*c*) Eph. n. c. cent. 1 & 2. obſ. 184.

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tinguishing one ſpecies from the other, as far as it is in the power of cures to do, and of the nature, and cauſes of this diſeaſe, I would have you read what the celebrated Zeviani *(d)* has learnedly, ingeniouſly, and ſkilfully written; for if, from his very great regard, and friendſhip, to me, he would have theſe writings appear in my name, ſuch as it is, he had been able to ſend them to me, before this letter was diſpatch'd to you, ſome things would not have been wanting herein, which, in the preſent caſe, have eſcaped me. You will, therefore, turn to them in his writings. For I now go on to add to the many obſervations of dropſy, which I have deſcrib'd from Valſalva, ſome of my own, but not a great number, leſt this letter ſhould grow out into an enormous length.

26. A certain man labour'd under an aſcites, but ſtill more under an anaſarca; and this ſeem'd to be the more conſiderable, becauſe, as it did not occupy the face, which was emaciated, and the remainder of the head, the other limbs, eſpecially the lower, ſeem'd to have, when compar'd with the head, a moſt monſtrous magnitude. This man dying in the hoſpital of incurables at Bologna, in the year 1704, if I rightly remember, I diſſected him rather in order to enquire into the nature of the anaſarca, than of the aſcites. And I made my enquiries in the thighs, and the ſcrotum, for the legs began to be putrefied. The cuticle of the thighs was here and there rais'd up into bladders, by the water which lay underneath it: one of them was of the bigneſs of my fiſt. Having cut quite down to the bone, I examin'd the ſections, and found that the adipoſe membrane was much thicken'd; and that the cellulæ malpighianæ thereof, were fill'd with a watery fat, or rather with water, in the chief part of them, which, by reaſon of the great number of ſmall membranes of the cells lying betwixt, reſembled a jelly, as I have ſaid in the Adverſaria *(e)*. And as the adipoſe membrane is propagated, not only betwixt the muſcles, but alſo betwixt the faſciculi of fibres of which the muſcles are made up, ſo in all theſe places was the water likewiſe propagated, having the ſame gelatinous appearance. Nor did I meet with any other appearance upon cutting into the ſcrotum, which was extremely tumid. For the cells, in particular, of which the dartos is compos'd, as they are continu'd from the adipoſe membrane, were diſtended with water. The water therefore iſſued from theſe, and all thoſe other ſections, and if you pleas'd might even be eaſily preſs'd out; but not entirely; for ſome conſiderable quantity remain'd betwixt the little membranes of the cells.

Wherefore, transferring the knife to the abdomen, although I found ſcarcely any water between the integuments thereof, yet I did not believe that it had ſo ſoon flow'd down through the ſections of the ſcrotum, and thighs; but I rather thought that by the large quantity of waters which fill'd the belly, and diſtended the abdomen, the water was forc'd out of the integuments of this cavity, which would otherwiſe have ſtagnated there, and carried down into the lower limbs; and this while the patient was living: or if you chooſe rather to conſider it ſo, when it was about to aſcend from theſe limbs, it was not admitted betwixt thoſe integuments by reaſon of the ſame preſſure there-

(d) Del flato, &c. l. 2. c. 28. & l. 1. c. 27. *(e)* II. animad. 16.

28.

on

on from the waters beneath, that I mention'd juſt now. But in what ſtate the viſcera of the belly were, I did not accurately remark; for, as I ſaid before, I did not at that time propoſe making this enquiry.

27. You ſee then, that the ſeat and cauſe of the tumour, which is made by the anaſarca, are not only under the ſkin in the adipoſe membrane, but alſo in all the appendages of that membrane, eſpecially where the ſwelling is conſiderable; ſo that as, beſides this membrane itſelf, theſe appendages are likewiſe diſtended, and that not only betwixt the external muſcles, and thoſe that lie beneath them, but even betwixt the faſciculi of the fibres of theſe muſcles, a large tumour is conſequently generated. You ſee, at the ſame time, what it is that frequently impoſes upon obſervers, by the appearance of a jelly; for the ſame little membranes, lying betwixt the portions of pinguedinous oil, are the reaſon of its appearing leſs fluid, in ſound and healthy bodies, than it really is in the living body.

Yet I would not deny that, either by reaſon of the remains of this oil being interpos'd, or becauſe the confin'd water is very viſcid, or becauſe by ſtagnation, and the ſeaſon of the year, it becomes pretty thick, there is, ſometimes, ſomething beſides theſe membranes which offers that appearance to our eyes. That the laſt ſuppoſition was the only one approv'd by Glaſerus, you will learn even from the Sepulchretum *(f)*; though others ſeem rather to have prefer'd that which I prefer, and among theſe Peyerus *(g)* and Wepfer *(h)*.

28. In diſſecting an old woman who had died of an aſcites, though not a very conſiderable one, in the hoſpital at Padua, about the end of the year 1716, I obſerv'd theſe things.

The belly, when the water was all exhauſted from its cavity, ſhow'd the liver to be beſet, inwardly and outwardly, with many white, but not very hard, tumours; and in the pancreas was one ſimilar tumour, but harder, and much more large, as it occupied all that part of this viſcus, by which it is connected to the inteſtinum duodenum. The proper membrane of one of the kidnies (for I did not examine the other) was become much thicken'd, and was eaſily drawn off by the hand: the little tubuli, or ſmall canals, were, alſo, much thicker than uſual, and for that reaſon much more evident.

The uterus was not diſeaſed internally. But externally, it ſhow'd, in one ſide, a conſpicuous cicatrix, as if from a wound, whereas there was none in the ſkin of the belly: and on the oppoſite ſide, not far from the cervix, it protuberated into a roundiſh tumour; which being cut aſunder, together with the paries of the fundus, that lay beneath it, and in great meaſure inclos'd it, exhibited a ſubſtance of a red colour, inclining to livid, and yet not harder than the other part of the uterus. In the teſtes were thick, white bladders, which contain'd nothing in their cavity: but one, which was much larger, contain'd a watery humour.

The thorax was ſound, except that it had ſome water extravaſated in it, but not in great quantity. The brain was in a natural ſtate, firm, and had not the leaſt water contain'd therein.

29. There was ſufficient cauſe, not to ſpeak of other things at preſent, in the pancreas, and liver, not only that the chyle and blood ſhould not be pre-

(f) Sect. hac 21. obſ. 21. & ſchol.
(g) Ibid. obſ. 3. §. 1. & ſchol.
(h) Ibid. obſ. 17. §. 5.

par'd

par'd, agreeably to the intention of nature, but alſo that the motion of the lymph and blood ſhould be retarded in the belly.

It once happen'd to me, that when I walk'd into the country for the ſake of refreſhing air, and meditation, I met with a flock of ſheep, out of which the butchers were buying ſome at a very equitable, and others at a very low price. When I enquired into the reaſon of this difference, theſe, ſaid they, for which we give the higher price, are ſound, but the others have a hard liver, and water in the belly. As the belly was not more tumid in the one than in the other, and no other mark of diſeaſe appear'd, that I could obſerve, I ſhould have ſuppoſed that they had not ſpoken from real knowledge, if I had not been convinc'd, ſoon after, from ſeeing ſome of theſe unſound ſheep kill'd and open'd. And they had made uſe of this mark to judge by. Lifting up the upper eye-lid of the ſheep, and attending to the colour of the parts, that lie about the eye, they diſtinguiſh'd the ſound ſheep by the red colour, and the morbid by the white: thus, as the other part of the body is cover'd with hairs, they examin'd the parts which were not cloth'd therewith, juſt as phyſicians do the face; and that with ſo much the more advantage, as a greater number of veſſels, and thoſe which are very conſpicuous, lying in that part, more clearly ſhow what the nature of the blood is.

I ſhould not have related theſe things to you, if I had not lately ſeen that Boerhaave (*i*) refers to the very ſame mark, and expreſsly transfers it from the brute creature to the human; ſo as to aſſert, that by the pallid colour of the tunica adnata, and the caruncle of the eye, "a watery cacochymia is ſignified;" and as we know from this ſign, "that there is a deficiency of red "blood, that all the diſorders are preſent which are the conſequents of ſuch a "defect." At leaſt many of theſe may be preſent, or follow not long after.

So among the ſheep, that I have ſaid were inſpected by me, at that time, there was one, which, although it had no better a liver than the reſt, nor was leſs dropſical, was nevertheleſs very fat, the fat being white and ſolid, and the omentum very fine. That is to ſay, the diſorder in this ſheep was very recent: but if it had liv'd ſo long as the others had done, under the influence of this diſorder, it would not have been furniſh'd with ſo fine an omentum, and ſo good an appearance of fat. For in ſuch a habit of body, freſh diſorders are continually added to the firſt; as you may ſee even in the bodies of men, to which I return: for in the diſſection of ſuch bodies, the viſcera, for the moſt part, are ſo much the more diſeas'd, in proportion as they have been longer macerated by the dropſy, or by the diſorders that precede the dropſy. I will give an inſtance of each caſe: and firſt of the ſecond.

30. Caſpar Lombria, a Venetian nobleman; of a bilious temperament, as the manner of ſpeaking is, of a large and robuſt body, and, for that reaſon, ſo much the more careleſs of all medical precepts, in every method of life; after having paſs'd his fortieth year, was ſeiz'd with a long diſorder which appear'd in different ſhapes, and having made uſe of cooling liquors, during this diſeaſe, to an immoderate degree, eſcaped from it indeed, but with his belly ſomewhat more tumid than natural. Yet this being remov'd by the

(*i*) Prælect. ad inſtit. §. 868.

help

help of remedies, he had no ſymptom that deſerv'd any great attention, till a kind of diarrhœa began to affect him, and return at intervals, ſometimes with conſiderable violence.

By theſe diſcharges the thirſt, which was, at other times, almoſt natural to him, was increas'd; and his urine, which he us'd to make in large quantities, grew very ſaturated in its colour, and very much diminiſh'd in its quantity. Yet his ſtrength was not at all injur'd hereby, till about the latter end of the winter of the year 1722, which was the forty-ſeventh year of his age, when he was troubled with the diarrhœa for almoſt a whole month together; a matter of various colours being diſcharg'd, and for the moſt part crude, ſerous, and frothy: whereas it us'd, before, only to hold him for eight or ten days, in which time he diſcharg'd a great quantity of yellow and fluid matter.

This diarrhœa being overcome by the help of proper remedies, return'd, ſoon after, even more violently, by the neglect of regularity in living. Again was this diſorder remov'd; when a tremor, with which he had been ſlightly affected from his infancy, and which after that firſt illneſs became very manifeſt through his whole body, and was now and then made more violent from the inteſtinal fluxes, began to be attended with ſome new diſorders of the head.

The phyſicians having, for a long time, forbid the uſe of generous wines, on account of this tremor; though their orders ought to have been more punctually obey'd; and having permitted him to loſe a ſmall quantity of blood, on account of theſe new diſorders, they ſaw, on the upper part of it, after concretion, a cruſt, which was, in one half of it, of a green colour. Yet by making uſe of a proper method of cure, his ſtrength, colour, and appetite for food, ſeem'd to be reſtor'd, and he made water in a very proper quantity, when the patient began to be tir'd of the medical regimen, which had been of ſo much advantage to him, and would make no farther uſe of it after the thirtieth day. Nor was it that he omitted theſe remedies only, but he had violent commotions of mind, and great exerciſes of body. And theſe were ſucceeded, within fifteen days after the omiſſion of his medicines, by the beginning of a fatal diſeaſe. His abdomen, which, before, us'd often to ſwell with a great quantity of flatus, but to be reduc'd ſoon after, began now to be tenſe, with a continual, and very uneaſy tumour; and when ſtruck with the hand, to reſound like a drum: his feet were alſo a little ſwollen: his urine was of a very high colour, and in very ſmall quantity: his thirſt was very troubleſome.

Theſe things being obſerv'd in the latter end of May, and Michelotti, who had begun to uſe all his art againſt this tympanites in vain, being oblig'd to ſet out for France, before the middle of June, with the Venetian ambaſſadors, earneſtly recommended the patient to me, as he was coming to Padua at the ſame time; ſo that if I could not conſtantly ſee him, together with his phyſician, I might, at leaſt, when other occupations ſuffer'd me, frequently aſſiſt him by my advice. I however, not yet having ſeen the patient, only from attentively reading thoſe ſymptoms that I have deſcrib'd to you briefly, conjecturing that there was a diſeaſe in ſome of the viſcera, in others a weakneſs, deſpair'd of curing him: nor did I conceal this from his relations, who very well knew that for the ſpace of ſeven years paſt, he had ſcarcely ever been

been without a diſeaſe; and upon my enquiry confirm'd that which is ſaid in the latter end of the books *de Morbis*, " that he had fallen into this diſeaſe, " when his body had been melted down by another."

Therefore, I ſaid expreſsly the ſame thing to them, that is immediately added there: " if then the patient has been ſuddenly ſeiz'd with this diſeaſe, " there is no doubt but he will die in conſequence of his having been ſo " long afflicted with another." Nor was my opinion at all different, after having ſeen the patient: and into this opinion, after that, came all the phyſicians who were the moſt eminent, at this time, in Padua. For although flatus having been ſometimes diſcharg'd both above and below, the abdomen reſounded no more if you ſtruck it with your hand, yet the ſwelling thereof, and the other ſymptoms that have been mention'd, were ſo far from decreaſing, that they were even increas'd every day, whatever method of cure he was put into; ſo that the patient did not ſeem, now, to have brought hither a tympany, but a ſpeedily-increaſing aſcites, to which a dropſy of the thorax, and, finally, a dropſy of the brain was added, as you will know from thoſe ſymptoms that I ſhall ſubjoin.

In the firſt place, if laying your left hand on the ſide of the abdomen, you ſtruck the oppoſite ſide with ſmall, but repeated, ſtrokes of your right hand, you perceiv'd the fluctuation of the water ſtriking againſt the left hand. Yet after a few days, the belly was not only full of water, but immoderately tumid, and by its diſtention gave reſiſtance to the hand which endeavour'd to make an impreſſion upon it: and, at the ſame time, not only the feet, and legs, had an œdematous ſwelling, but the thighs, alſo, were very turgid, the face, and the upper limbs, becoming quite emaciated. In the beginning he had a kind of cough, and afterwards none: but although the patient could at firſt lie on which ſide he pleas'd, he could lie, afterwards, only on the right: and although he could lie down in his bed, through the whole courſe of the diſeaſe, yet twice, before the laſt weeks, he was compell'd to leap out of bed, by a ſenſe of ſuffocation coming on, which went away as ſuddenly as it had come.

At length, on the laſt ten days he was, for the moſt part, affected with a kind of ſleep, and frequently with a little delirium, but only ſuch as was very ſlight. Then, alſo, the force of the heart, which had for a long time been very ſtrong, began to be very weak, at times: but the ſtrength of the other muſcles did not fail, even almoſt to the laſt. If you except two fevers, which had attack'd him many days before death; the firſt not without long ſhiverings and tremblings, which however ended within two days; and the ſecond more ſlight, and more ſhort; I ſay, if you except the time of thoſe fevers, the pulſe diſcover'd nothing preternatural, except that frequently, and, particularly, about the evening, it was found to be pretty quick, and his fleſh pretty hot.

In the beginning, there was a very troubleſome ſenſation in the epigaſtrium, and even a pain betwixt the enſiform cartilage, and the navel; which, afterwards, was not perceiv'd in that part, but here and there throughout the belly: and a ſenſe of pricking remain'd in the region of the liver. His ſleep, and appetite for food, which in the beginning had been moderate, were often deficient in the progreſs of the diſeaſe: and his thirſt was ſtill more and more violent.

violent. The inteſtines, ſpontaneouſly, diſcharg'd a great quantity of matter, which was, for the moſt part, fluid and yellow; and ſometimes the ſtools were of a different colour, and viſcid. On the other hand, the urine was always in very ſmall quantity, of a flame-colour, and ſaturated. As the patient, the relations, and the phyſicians, deſir'd nothing more earneſtly, than that the urine ſhould be diſcharg'd more freely, I can hardly ſay how many different remedies he took for this purpoſe. I believe there was no medicine whatever, whether weak, or powerful, ſimple, or compound, which comes from any of the three kingdoms, to ſpeak in the manner of naturaliſts, that was ſuppos'd to have any tendency of this kind, but was propos'd by one or other phyſician out of ſuch a number, and taken by the patient.

But all were of no effect, as generally happens where nature, itſelf, does not co-operate with the phyſician; for his urine was never, in the leaſt, increas'd in its quantity, or chang'd in its appearance, except that about fifteen days before death, and again, on the laſt days of his life, it depoſited a little quantity of ſomething, of a tobacco colour, in the bottom of the veſſel; which, upon diligent examination, I found to be blood mix'd with ichor, and this I demonſtrated to thoſe whom it concern'd, that they might, at length, put ſome ſtop to the uſe of diuretics. Some of theſe, but at a time that was leſs inconvenient, and ſuch as were leſs to be ſuſpected, I had alſo recommended, not with the hope of curing, but leſt the patient ſhould perceive that I deſpair'd of his caſe, and among theſe ſome of the turpentine kind.

But as I obſerv'd that the urine had not gain'd even that violet odour, which it generally does from the uſe of theſe remedies, I diſtruſted them, and even the paſſage of the kidnies ſtill more than before; and thought it was better to return to the inteſtinal paſſages, eſpecially as the medicine call'd purified tartar, which we us'd at intervals, caus'd a conſiderable diſcharge, and often a very watery one, without any inconvenience, and always brought on an alleviation of ſome hours, from a troubleſome kind of ſenſation, which was perceiv'd at the region of the ſtomach. Yet even this method was of no advantage.

The patient had heard, from Michellotti, that the urine of a heifer had ſucceeded with him, more than once, in the cure of an anaſarca. As he was, therefore, deſirous of trying, though neither the time of the year, nor ſome other circumſtances of this kind, were ſuch as L'emery *(k)* would have prefer'd, yet I indulg'd him in the uſe of a remedy, of the ſame kind as "the urine of ſheep, or the urine of aſſes;" which, as I had read in Avicenna *(l)*, were formerly recommended, by ſome phyſicians, againſt this diſeaſe; and which, finally, not only diſcharges the water of patients in an aſcites, by the kidnies, but alſo by the inteſtines, as the obſervations of L'emery inform us: I indulg'd him, however, with this reſtriction, that he ſhould not drink more than ſeven ounces on the firſt day, and ſhould add two ounces every day afterwards. And on the firſt day, he felt an effect which L'emery has not taken notice of, in the recital of others.

(k) Mem. de l'Acad. r. des ſc. a. 1707. *(l)* Canon. l. 3. Fen. 14. tr. 4. c. 13.

For a little after he had taken it, his head was affected with a kind of drunkenneſs, which, however, went off ſoon afterwards, and did not return on the following days, although a greater quantity was taken. On the fifth day, the patient went ſo far as thirteen ounces, yet did not make more water, but diſcharg'd a greater quantity by ſtool, ſo that, on this very day, he diſcharg'd water to the quantity of four or five pints, without any loſs of ſtrength: yet was no other kind of relief obſerv'd therefrom, than what had been obſerv'd from the tartar; the belly not being at all leſs ſwell'd, and the lower limbs even becoming more tumid. For which reaſon this remedy was then intermitted. Some time after, the patient would return to the ſame. He drank every day, ſucceſſively, for five days together, eight ounces. But found it of no more ſervice than before: and indeed, upon being attack'd by the ſecond fever, which I ſpoke of above, was oblig'd entirely to omit it.

In vain alſo; and I wiſh I could ſay without injury, in a diſeaſe, which it was much more eaſy to increaſe, than diminiſh; in vain, I ſay, did he uſe other remedies of the ſame kind, whether they were taken in by the mouth, or in the form of glyſters, or lay'd upon the abdomen. For when a certain ſenior phyſician had order'd the juices of dwarf-elder, and wormwood, to be applied to the belly, it had no effect, but to bring on a fruitleſs deſire of going to ſtool, and an itching of the ſkin about the region of the liver, where the ſmall veins appear'd livid. He therefore gave up the uſe of theſe juices, nor did he find any application to the abdomen of uſe, if the pains of the belly at any time required to be aſſwag'd, but the omentum of a weather-ſheep ſmear'd over with the oils of violets, wormwood, and almonds. But this was more early in the diſeaſe. Now let us go on to the end of the diſorder and the diſſection. He died like a ſuffocated perſon, with his face and ſhoulders very livid: but water and blood came out of the mouth and noſtrils of the body after death.

The body was diſſected the day after, which was on the third of Auguſt, in the year before mention'd, in order to be embalm'd. The upper limbs were mark'd with a kind of livid petechiæ. And from the lower limbs, an œdematous tumour was produc'd through the back, quite to the ſcapulæ.

The belly contain'd a quantity of fœtid water, of a green colour inclining to yellow, with which the parietes were diſtended to their utmoſt capacity. In this water, ſwam ſome pieces of purulent ſubſtance, which I ſuppos'd to have come from the omentum, though they ſeem'd to be mucilaginous. The ſtomach, and the inteſtines, which were ſcarcely at all turgid, were of a black colour, as the meſentery was alſo. The liver was hard, internally, and externally conſiſting of tubercles, that is of glandular lobules, which were very evident, and evidently diſtinct from each other: yet it was not larger than its natural ſize. But the ſpleen was large, and of a compact ſubſtance, and, when cut into, diſcharg'd not the leaſt blood. One of the kidnies contain'd ichor in its pelvis.

In the thorax, and particularly on the right ſide, was a great quantity of water, of the ſame kind with that in the belly. So in the pericardium alſo, in which, however, there was no great quantity. The lungs were turgid and

and blackiſh in their colour. The heart was without blood, not to ſay without polypous concretions.

The head, as the body was embalm'd, in order to be carried no farther than Venice, to be laid in the family vault, it was not neceſſary for us to open; nor, indeed, were we at liberty to do it.

31. Since the time that Joannes Poſthius, as you have it here in the Sepulchretum (*m*), found the ſubſtance of the liver, in an aſcites, "univerſally "granulated internally, the granules appearing every where like peas, "both as to figure, and number," many other ſimilar obſervations have been made upon the ſame diſeaſe. Four others are extant in the ſame place, one of Wepfer's (*n*), to whom the liver "appear'd like a body conglome-"rated of a great number of glands," a ſecond of Ruyſch's (*o*), a third of Brown's (*p*), a fourth of Hartmann's (*q*), to whom the ſame viſcus ſeem'd to conſiſt, in the whole of it, merely of large glands," or "of glands," or "of lobules." And the ſmalleſt parts of the liver cannot be ſo enlarg'd, but they muſt be injurious to the function of this viſcus, and much retard the motion of the blood through the belly; either by compreſſing the other parts which lie between them, or, at leaſt, by compreſſing the ſanguiferous veſſels.

Wherefore Poſthius, and Brown, in vain drew off the water, which would be frequently reſupplied, when "the liver was diſeas'd," as Eraſiſtratus admoniſh'd in the works of Celſus (*r*). For as to what Celſus replies thereto, "that when the water was drawn off there was room made for remedies," to bring back the liver to a ſound ſtate, this diſeaſe of the liver is certainly not of ſuch a nature, as to admit of medicine. And although this appears only by diſſection, yet there are ſo many diſeaſes, both of this and the other viſcera, which do not admit of a cure, that when there are ſymptoms of the viſcera being injur'd, we muſt not run, heedleſly, to preſcribe the evacuation of the waters. For which reaſon, in the caſe of this noble patient, of whom I have been ſpeaking, no one, out of ſuch a number of phyſicians, ever propos'd it.

But as to what many, in conjunction with Ballonius (*s*), and our Sanctorius (*t*), are afraid of, leſt the inflammation of the peritonæum, inteſtines, and a gangrene, ſhould be the conſequence of evacuating the waters, they may ſeem to fear it with great juſtice, to thoſe who read over the examples of caſes, wherein the water was drawn off, many of which are related in the Sepulchretum (*u*). And to theſe you will, in the firſt place, add that famous inſtance, which the celebrated Scherbius (*x*) has deſcrib'd, of a man, in whom a calculus form'd in the receptaculum chyli, and oppoſing itſelf to the quick aſcent of the chyle, and of the lymph, into the ductus thoracicus, had brought on an aſcites of ſuch a kind, that the water was drawn off by

(*m*) S. 21. obſ. 4. §. 21.
(*n*) Obſ. 32.
(*o*) In additam. obſ. 34.
(*p*) Obſ. 49.
(*q*) Obſ. 50.
(*r*) De medic. l. 3. c. 21.
(*s*) In ſchol. ad §. 1. obſ. 5. hujus ſect. Sepulchr.
(*t*) Ibid.
(*u*) Obſ. cit. & 2. & 4. §. 1; & 6. §. 1. & 11.; & 11. §. 1. & in additam. obſ. 49. & 64. & 76. & 86.
(*x*) De calculo receptac. chyli. hydr. cauſa.

the ſurgeon ſeven different times; as freſh fluids were always collected, till, ſixteen hours after the laſt evacuation, the patient ceas'd to live. And although this dropſy, as you plainly ſee, had not its origin from any taint of the viſcera, yet the "omentum was found to be almoſt univerſally con- "ſum'd; and the other viſcera were beſet with a gangrene: nor is it to be "wonder'd at," ſays Scherbius, "ſince, in proceſs of time, the ſame is to be "ſeen in all dropſical bodies."

But the love of truth does not ſuffer me to conceal what may, on the other hand, be ſaid in favour of the paracenteſis; as theſe laſt words, themſelves, do not altogether run counter to its uſe, but even, if you rightly attend to them, recommend it. Not to enquire, therefore, whether that is always the effect of the water being diſcharg'd, and of the air getting in at the orifice, with what inſtrument ſoever, in whatever manner, or how many times ſoever, this operation may be perform'd; which the diſſection of dropſical bodies frequently ſhows to be the effect of the diſorder itſelf, as in theſe bodies the inteſtines are often found to be of a black colour, as they were in the patient here ſpoken of, though the waters had never been drawn off by paracenteſis; certainly a great number of cures, that have been ſucceſsfully perform'd in this method, will ſpeak in its defence, and diſſections will alſo argue for its uſe, as they have frequently made it evident, in patients who have died from other cauſes, that "the inteſtines were in a very good condition, and that in the abdomen, not to ſay in the peritonæum, where it had been perforated, "there was no trace of inflammation, and much leſs of "ſphacelated corruption, to uſe the words of Polycarp Schacherus *(y)*, who gives us the diſſection of a virgin, that had been long troubled with an aſcites, and had died "on the eighth day after the operation" of the paracenteſis, which had been many times perform'd upon her.

32. But the inſtances of this method of cure being ſucceſsful, are ſo rare among us, or, at leaſt, were ſo rare, that during all the time I ſtaid at Bologna, I never heard one phyſician ſay that he had ſeen it ſo; at which time, likewiſe, I ſaw there, and heard from every body, that the operations of this kind, which were perform'd by foreign ſurgeons, and theſe men of eminence, were unſucceſsful. And indeed I remember that Albertini, on comparing the phthiſis, and the dropſy, with each other, ſaid that the former had been three times cur'd by him, though in a confirm'd ſtate; but that the dropſy of the abdomen, when confirm'd, he had, to that very day, never cur'd.

For if the water, ſaid he, is evacuated by the ſurgeon, I ſee that the patient dies: and if it be ſtrongly urg'd, by the phyſician, to the renal, or inteſtinal paſſages, the medicines which force it to theſe paſſages, do not ſo much diſcharge that which is extravaſated in the belly, as the ſerum which ſtill remains in the blood; and do not force it more into thoſe paſſages, than into the belly, where an entrance is already made for it. Thus he told me, it had lately happen'd to a man of eminence, in particular, who having taken remedies of this kind from an empiric, had his urine indeed increas'd thereby, but had the ſwelling of the abdomen ſo much increas'd at the ſame time, that ſcarcely any blood could be found in the blood-veſſels after death.

(y) Diſſ. ſupra ad n. 8. cit.

Yet

Yet he did not conceal the ſurprizing cures of patients labouring under an aſcites, whereof he had heard, or read; five of which were even reported to have happen'd at Bologna, from a puncture of the ſcrotum. But as he ſuppos'd that ſome had labour'd under an anaſarca, rather than an aſcites, others under an aſcites, but one that was not yet confirm'd, and ſome under a dropſy of the peritonæum, he did not, in fact, leave many behind; and the cure of theſe was owing to nature rather, as he thought, than to art. And, indeed, the power of nature in curing this, and other diſorders, is ſometimes very conſiderable.

It happen'd in the place of my nativity, that a noble youth being ſeiz'd, once and again, with an ardent fever, and drinking a great quantity of water, both in his firſt and ſecond illneſs, they were each of them ſucceeded by a very conſiderable aſcites, which was carried off, both times, by a ſpontaneous diſcharge of a great quantity of water; ſpontaneous, I ſay, for this was commonly known, and the phyſician of the patient affirm'd it to me, who certainly would not have, unjuſtly, detracted from the honour of his own cures.

Without doubt, nature had ſufficiently unlock'd, for herſelf, the paſſages by which ſhe might reabſorb the fluid ſtagnating in the belly, and ſend it to another part of the body; and theſe were the ſame which ſhe made uſe of, in that merchant ſpoken of by Mead (*z*), when ſhe took up again into the veſſels, and retain'd there, all the waters which were extravaſated in the belly: and that in one night only, and in the very night which preceded the day, intended for drawing them off, by perforating the abdomen. But when the ſame nature, neither of herſelf, nor when excited by gentle invitations, or ſomewhat more acrid ſtimuli, attempts any thing for her own relief, muſt we attempt any thing violent, and dangerous, and contrary to her diſpoſitions? Or muſt we rather make uſe of the paracenteſis, where all circumſtances permit it, which is a remedy, as we may ſuppoſe, firſt pointed out by the ſame nature herſelf?

33. For as to the navel being open'd by the great force, and diſtention, of the water, and the aſcites being cur'd by the diſcharge thereof, I do not ſuppoſe this to have been firſt ſeen by Benivenius, and others whom Donatus (*a*), and Gabelchoverus (*b*), quote, but by men of antiquity formerly; and theſe perſons, alſo, have remark'd that they, in whom the water was diſcharg'd altogether, died; but that ſome of thoſe, in whom it came out gradually, and at different times, recover'd. Phyſicians, therefore, might, according to their general rule, imitate nature, when ſhe operates rightly: and Hippocrates (*c*), and after him Celſus (*d*), advis'd not to let all the water be diſcharg'd at one time; for that this was fatal: the cauſes of which have been explain'd by many learned men, in our preſent age, and among theſe by the younger du Verney (*e*), by Werlhofius (*f*), and Mead (*g*); but more copiouſly by the illuſtrious Senac (*h*).

(*z*) Monit. med. c. 8. in fin.
(*a*) De med. hiſt. mirab. l. 4. c. 21.
(*b*) Sect. hac Sepulchr. in ſchol. ad §. 1. obſ. 6.
(*c*) Sect. 6. aph. 27.
(*d*) De medic. l. 2. c. 8.
(*e*) Mem. de l'acad. r. des ſc. a. 1703.
(*f*) Commerc. litter. a. 1735. hebd. 37. n. 2.
(*g*) C. 8. ſupra ad n. 32. cit.
(*h*) Traité du coeur l. 4. ch. 12. n. 3.

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The explications of theſe gentlemen ſeem alſo to be confirm'd by that obſervation (*i*), in which all the matter was drawn out without any ſwooning being the conſequence; but ſo ſlowly, and gradually, by reaſon of its tenacity, that almoſt three hours were ſpent in the operation: and this will ſeem leſs ſurprizing to you, when you have learn'd from the celebrated Targioni (*k*), that there was a dropſical perſon, who had his belly fill'd with ſo denſe a jelly, that it could not be drawn out by any art of the moſt experienc'd ſurgeon. But nothing has more confirm'd theſe explications, than the method which was happily thought of, in conformity thereto, of drawing off all the water at one time, without any injury; that is to ſay, by binding the abdomen with rollers, not only after the water was diſcharg'd, which du Verney (*l*), whom I juſt now quoted, order'd after a plentiful diſcharge, but alſo while it is ſtill more and more drawn off, and then in particular.

By this method, he who firſt invented, and applied it, I mean that excellent phyſician Mead (*m*), mentions that many perſons, but a woman, in particular, was cur'd under his care, who had all the water diſcharg'd "at "once," to the quantity of "ſixty" pounds weight; and that another had her life perſerv'd, for the ſpace of ſix years and ſeven months, from whom, through the whole progreſs of her diſeaſe, water was taken away in ſuch a quantity as, if the hiſtory were not well known to every body at London, would be incredible, that is "a thouſand nine hundred and twenty pints." But with how much caution theſe operations are to be undertaken, and perform'd, thoſe eminent ſurgeons among the Engliſh, that he mentions, have ſhown: although he even knew a dropſical woman, who ſurviv'd after the abdomen had burſt of itſelf, and diſcharg'd a great quantity of water; a ſimilar caſe to which you will read the deſcription of by Nebelius (*n*). In both of theſe inſtances the abdomen being over diſtended had crack'd near the navel.

Other obſervations are, moreover, extant of waters ſpontaneouſly burſting out at the navel itſelf, with a happy event; but ſcarcely ever of all burſting out together: and theſe, not only produc'd by thoſe whom I mention'd above, but by others (*o*) alſo. Yet phyſicians have not gone on to open the navel, in order to cure the aſcites, as ſome of them were influenc'd by contrary obſervations, and moſt of them taught by experience, that in proportion as the abdomen is more eaſily extenuated there, by the diſtention of the water, with ſo much the more difficulty does the wound heal up afterwards, which frequently happens; and that it is ſtop'd up with leſs convenience at preſent, in order to prevent more water being diſcharg'd, than the ſtrength of the patient could bear; and, finally, that all of it could not poſſibly be drawn off, without the patient being oblig'd to lie on his belly, which is a poſture very inconvenient in ſuch caſes.

For as to its being better to diſcharge the water by the navel, becauſe, by theſe means, the umbilical vein being open'd, the watery humour would not be pour'd out from the liver thereby, into the belly, but would be

(*i*) Commerc. litter. a. 1745. hebd. 52. n. 3.
(*k*) Prima raccolta di oſſerv. med.
(*l*) Mem. cit.
(*m*) C. 8. cit.
(*n*) Eph. n. c. dec. 3. a. 9. & 10. obſ. 122.
(*o*) Act. n. c. tom. 8. obſ. 79.

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thrown out of the body; this was an opinion which, having taken its riſe lately from hypotheſes, and from the opinion of ſome perſons that Avicenna makes mention of (*p*), has ſeem'd, at laſt, to be confirm'd by ſome obſervations. For there have been, as you ſee here in the Sepulchretum (*q*), thoſe who have ſaid that this vein, which had been already long contracted into a ligament, being ſoften'd by the continual maceration of the waters, was again open'd, and that it then diſcharg'd the ſuperfluous water from the liver, by the navel; and that they had found it ſo dilated, at this time, as to admit a catheter, and a gooſe-quil: and that it was very full of water, and contain'd a conſiderable quantity.

I, however, although I ſhould be willing to grant, that it may be kept open in ſome, as it is from the original formation, rather than ſuppoſe it could be eaſily open'd again, after being condens'd into a ligament; and though I cannot agree with Schultzius (*r*), who has aſſerted that after the birth it is drawn up to the liver, from the navel, ſo as not to go thither any more; yet it would not then, by any means, appear, how it ſhould take up ſerum only, from the ſinus of the vena portarum, and leave the blood behind. And this I do not ſay, ſo much on account of Platerus, and Hildanus, as on account of Rolfinc, who is more modern than either of them.

Yet I do not deny their obſervations; and only ſuſpect that they did not find the umbilical vein, but merely the theca, to be open and full of water; with which theca, from the duplicature of the peritonæum, this vein is increas'd in its bulk. For in dropſical bodies the membranes are eaſily relax'd: and the vacuity betwixt them is fill'd with the redundant water. And this ſuſpicion of mine is ſtrengthen'd by an obſervation, which is not Riolan's, as Rolfinc thought, but is nevertheleſs extant in his works (*s*). The umbilical vein, ſays he, "was found to be fiſtular in a certain dropſical "woman, and through that, water was pour'd out betwixt the peritonæum, "and the abdominal muſcles."

But now let us ſubjoin the caſe of a very long dropſy, as I have promis'd (*t*).

34. A virgin of twenty years of age, having had no appearance of the menſtrual diſcharges, for two years before, was firſt attack'd with pains in the hypochondria; after which her belly began to be tumid. She had been afflicted with this tumour for about a year, and had us'd various remedies to no purpoſe, when ſhe was receiv'd into this hoſpital of Padua. The bulk of the ſwelling was extremely large: yet this patient could lie down in bed for the whole month ſhe was there, even to the laſt; but ſhe lay, for the moſt part, on her left ſide. She was thirſty, but not to a great degree; unleſs when a ſlight fever, with which ſhe was conſtantly troubled, increas'd. She diſcharg'd but a ſmall quantity of urine: yet it was not very high-colour'd. She now and then complain'd of thoſe pains in the hypochondria, that I have already ſpoken of, which ſeem'd to be convulſive, but not very violent. Many remedies were made uſe of, but without the leaſt advantage: the quantity of her urine was never increas'd. Among theſe remedies were

(*p*) Tract. ſupra ad n. 30. cit. c. 5.
(*q*) Obſ. 13. cum ſchol. & obſ. 14.
(*r*) Diſſ. de vaſis umbilic. nator. & adultor.
(*s*) Anthropogr. l. 2. c. 12.
(*t*) N. 29. in fin.

ſome-

ſome things which created an uneaſineſs, as gum ammonicum, and turpentine: for which reaſon they were omitted.

At length, when the belly, from being coſtive, was become pretty lax, fœtid, and liquid, ſtools began to be diſcharg'd, but not purulent. As the diſcharge of this matter continu'd, the belly did not decreaſe, and her ſtrength was every day broken more and more, that happen'd which is foretold of a dropſical perſon, in the latter end of the fourth book *de morbis*: "but where the inteſtines are alſo very lax he dies very ſoon, with the "power of his ſenſes and his ſpeech quite perfect." Her ſenſes, therefore, continuing to the laſt, ſhe died about the middle of December, in the year 1744. Having this relation made to me on the following day, and having made it known to a very crowded audience, and foretelling ſome of the appearances which were ſoon after found under their eyes, the diſſection was immediately begun in their preſence.

The body was emaciated, particularly in its upper limbs, but not to a great degree. The inferior limbs were affected with ſo ſlight an œdematous tumour, that you could ſcarcely diſtinguiſh it, but by preſſing them with your finger: and this did not reach quite to the top of the thighs. The belly was very large, but not tenſe; nor yet the navel, although it was prominent.

The abdomen being perforated at one ſide, a great quantity of water was gradually diſcharg'd, which left the ſame ſenſation upon the hands, as a lixivium pour'd upon them would have done. That which firſt flow'd out was yellowiſh, and thin; the other leſs thin, and almoſt white. But when I examin'd both of them, after being left, for twenty-four hours, in a very large veſſel, the whole of it ſeem'd to be whitiſh; yet when it was pour'd out, by degrees, from one veſſel to another, it appear'd to be rather yellowiſh: nor had much whitiſh humour, ſubſided to the bottom, in proportion to the quantity of water. What had ſubſided, however, was pretty thick, from little pieces of the omentum being mix'd with it, and other things of which I ſhall ſpeak hereafter.

However, neither the water, nor the body, had a putrid ſmell, notwithſtanding the ſmall inteſtines had begun to grow black in three places, though not beyond the breadth of an inch in each place. The greater part of thoſe inteſtines were tumid with air, but in not great quantity. The large inteſtines, as well as the ſtomach, were altogether empty, and collaps'd. The whole of the omentum (if you except a ſmall part of it which remain'd, and adher'd to the ſtomach) was torn into pieces, as it were; and not only entirely ſeparated from the remaining part of its ſubſtance, but from each other alſo: one of which had form'd itſelf into a round, red, and ſoft body, nearly of the length of a man's forearm.

The liver, on its whole convex ſurface, and even at its anterior border, coher'd with the diaphragram: and when divided from thence, ſeem'd to have that ſurface more protuberating, than was agreeable to the liver itſelf, and to the ſtature of the virgin, which was rather inclin'd to ſmallneſs. When cut into, I found it every where, except in the lobulus Spigelii, ſomewhat more pallid, and harder, than was natural: and the bile, which was in its veſicle,

veſicle, in ſmall quantity, of a yellow colour inclin'd to browniſh, turbid and viſcid.

The ſpleen, except that its ſize was preternaturally increas'd, was internally ſound: as a ſecond ſpleen alſo was, which was leſs by many degrees than the former (its diameter being only an inch in extent) of a roundiſh figure, and adher'd among the veſſels, being connected to the larger ſpleen, by membranes, and in the neighbourhood of it, but entirely disjoin'd in its ſubſtance, though exactly of the ſame ſtructure internally, and of the ſame colour. But in the coat of the larger ſpleen, beſide ſome hydatids, little bodies of a roundiſh figure, white, hard, and of different ſizes, were prominent: yet moſt of them were ſomewhat bigger than millet ſeeds.

The ſame appearances were obſerv'd, here and there, on the interior ſurface of the peritonæum, and on the exterior of the inteſtines, eſpecially of the ſmall ones, in which, likewiſe, were hydatids. The largeſt of theſe was equal to the ſize of a ſmall apple, and of two inches in diameter; the ſanguiferous veſſels from the inteſtine, producing themſelves through the membrane thereof, and dividing into branches. In it was contain'd water almoſt colourleſs, but in part mucous. The pancreas was hardiſh. And the meſenteric glands, which were ſo increas'd beyond their natural ſize, as almoſt to fill the whole meſentery, were perfectly ſcirrhous; as their hardneſs and whiteneſs demonſtrated.

Yet I met with the chief and peculiar diſorder in the teſtes, the tubes, and the uterus itſelf: which was not diſcover'd in the uterus, without diſſection; but in the teſtes, and the tubes, came ſpontaneouſly into view. For theſe parts had, equally on both ſides, together with the alæ veſpertilionum, ſo coaleſc'd one with another, and, being much thicken'd, had ſo grown into a kind of tuberous, and ſhapeleſs maſs, of a conſiderable ſize, that one could not, by any means, be known from the other, and much leſs ſeparated. The ſurface of each of theſe maſſes was lacerated, for a conſiderable ſpace, and was found to be ſpontaneouſly open, juſt as if a large ſteatoma had burſt itſelf. And to this I compar'd it, becauſe it conſiſted of a matter, which reſembled nothing more than half-dried ſuet: ſo white was it; of ſo unctuous a nature if you handled it; and ſo eaſily yielding to the probe when puſh'd into it. If you pull'd it aſunder, you perceiv'd that it conſiſted of ſo many ſmall pieces, as it were. And it was quite inodorous.

As the parts, which I have mention'd, ſeem'd to be converted into a kind of ſuet, ſo when I cut pretty deeply into the fundus of the uterus, which was ſound externally, and in the greater part of its parietes, I ſaw that the remaining internal part of the ſubſtance, of theſe parietes, was converted into a matter which was ſimilar to that juſt now deſcrib'd; except that, in its colour, it inclin'd ſomewhat to the cineritious hue. And with the ſame matter the cavity of the fundus was fill'd; and from that the part which was leaſt ſolid, ſeem'd to have been accuſtom'd to fall through the cervix, into the vagina, which was even now whitiſh, from the remains of this very matter, that could eaſily be wip'd off. However, the cervix, both internally, and externally, was perfectly ſound: and the magnitude of it, and of the fundus, alſo, was not greater than was to be expected, in a virgin of ſuch an age; except that the internal orifice of the uterus ſeem'd to be ſomewhat larger than uſual.

The other parts of the belly, and the kidnies in particular, were ſound. Yet the trunk of the great artery appear'd to be of a leſs latitude than it ought to be. And the diaphragm aſcended pretty high into the thorax, but much the moſt on the right ſide; whither it was forc'd, as I have ſaid, by the protuberance of the liver. When we took this viſcus away from the diaphragm, by cutting through the vena cava, ſome conſiderable quantity of blood flow'd from it, of a black colour, and not coagulated.

The lungs were every where, very cloſely, connected to all the parietes of the thorax, that is to the inferior parietes alſo. The upper part of the left lobe was, in one place, ſomewhat harder than is natural, yet not evidently diſeas'd. In the pericardium was a great quantity of water, of the ſame kind with that in the belly. The heart was lax; and in this, and the great veſſels, was only little blood, which was black indeed, but leſs fluid than that in the inferior vena cava, although without any polypous concretion.

While the head was cut off from the neck, a little water flow'd down, both from the cavity of the vertebræ, and of the cranium. And the lateral ventricles of the brain contain'd water in no very ſmall quantity, of a brownish colour and turbid: the plexus choroides were in great meaſure pallid. Yet the cerebrum was pretty firm, notwithſtanding the cerebellum was very ſoft.

35. There are many things in the obſervation in queſtion, which, if I were to conſider them ſeparately, would make this letter far more prolix than the preceding. You will perceive this from what I ſhall ſay of hydatids only. For although that rare diſorder of the uterus very well deſerves to be treated of, yet I ſhall have a more convenient opportunity of ſpeaking of it, in other letters, and perhaps in the next (*u*); for, certainly, this was not the proximate cauſe of the dropſy of which we are to treat at preſent, as the ruptur'd hydatids ſeem to me to have been. For, as on the external ſurface of the inteſtines, and the ſpleen, ſome hydatids were prominent, which had not yet burſt aſunder; ſo I ſuppoſe that there had been almoſt innumerable others, both in theſe, and in other parts, which having been ruptur'd long before, had pour'd out their fluid into the cavity of the belly. And, not to detain you with many words, the obſervations which I have very frequently made upon the tunica albuginea, and vaginalis of the teſticles (*x*), induce me to believe that the membranous laminæ of the hydatids, or of the coats in which they are form'd, after they have by rupture pour'd out the fluid that they contain'd, firſt contract themſelves, and their veſſels, into the form of a carun:le; and unleſs a freſh fluid continue to flow thither, are finally ſo indurated, and dried up, as to repreſent thoſe white and hard tubercles of a roundiſh figure, ſome larger in their ſize, and ſome leſs, as the hydatids had been, with which the internal ſurface of the peritonæum, in the virgin deſcrib'd, and the production of it through the external ſurface of the ſpleen, and inteſtines, were beſet.

You may read, in the Sepulchretum (*y*), an obſervation of Jacobus Wolffius, where he ſays, that in the body of a woman, who had labour'd under

(*u*) Epiſt. 39. n. 36.
(*x*) Vid. epiſt. 43. n. 16. & ſeq.
(*y*) In additam. ad hanc ſection. 21. obſ. 65.

an aſcites, " caruncles, which, when open'd, diſcharg'd an ichor, adher'd, " in ſeveral places, to the inteſtines." Read what is produc'd from Bilgerus (*z*), of another woman, who had an aſcites, " that the whole of the " inteſtines, on all ſides, and the peritonæum, on both ſides, about the " diaphragm, were fill'd with many thouſand little granules, in the ſame manner that ſometimes happens to hogs. Join to theſe the obſervations afterwards publiſh'd, which were taken from other dropſical bodies; as, for inſtance, that of the celebrated Anhornius (*a*), who ſaw the peritonæum, in a young man, " beſet with glandular knots, which wept a limpid water, if " preſs'd," and, in a woman, having, " here and there, many glandular " tubercles, protuberant in the ſhape of a bean, ſome larger, and ſome " ſmaller, in their ſize, which, when preſs'd, wept a lympid water;" and, in like manner, thoſe of the celebrated Stegmannus (*b*), and Goetzius (*c*), the firſt of whom obſerv'd the pancreas, in a man, to be ſprinkled with millet-ſeed, " as it were," and the latter, in a virgin, various tubercles of different " magnitudes, growing here and there" (to a ſac in which a fluid had been contain'd) " varying from the ſize of a large pea to that of the ſmalleſt " hemp-ſeed, ſometimes ſolitary, ſometimes in cluſters, but always ſcirrhous, " and hard, and, when cut aſunder, diſcharging no fluid, or gelatinous " matter."

Finally, read over again what I have formerly written to you (*d*), of hard granules, or tubercles, being prominent on the internal ſurface of the peritonæum, or pleura; as water was even then extravaſated in the great cavities, which thoſe membranes ſurround: you will certainly find the ſeries of ſucceſſive changes that I have deſcrib'd. It happen'd, ſome years ago, that in a woman, who had been taken off by an aſcites, the external coat of the inteſtines was found to be diſtinguiſh'd with very frequent tubercles. Part of the ſmall inteſtines was brought me, that I might judge what theſe tubercles were. When I firſt examin'd them they reſembled ſmall turgid lenticular glands: but they were without an orifice, and ſolid, and ſeem'd to be made up neither of glandular, nor of a fleſhy ſubſtance, but to be of a middle nature, as it were, betwixt both. I judg'd that I could determine upon nothing more probable, in regard to them, than to ſuppoſe that they were the remains of ruptur'd hydatids, contracted into themſelves, but not to ſo great a degree, at preſent, as to be dry and hard.

Nor was I deter'd by ſo very great a number of hydatids, as there muſt neceſſarily have been to agree with this ſuppoſition; ſince I very well remember'd the almoſt innumerable quantity, which Coiterus (*e*) formerly found in a profeſſor at Bologna. His words are, " to the meſentery, peri- " tonæum, inteſtines, ſpleen, liver, and, finally, to all the viſcera, veſicles " of an unequal magnitude, and theſe full of limpid water, adher'd." And not to lead you too far from the obſervations of other ancient authors, and even not to lead you from the Sepulchretum, wherein that of Coiterus is not entirely omitted (*f*), conſider that Philippus Perſius (*g*) found, in a woman,

(*z*) Sect. ead. obſ. 20. §. 16.
(*a*) Eph. n. c. cent. 9. obſ. 100. n. 2. & 7.
(*b*) Earund. dec. 3. a. 5 & 6. obſ. 168.
(*c*) Act. n. c. tom. 2. obſ. 208.
(*d*) Epiſt. 16. n. 30. & epiſt. 22. n. 18.
(*e*) Obſ. anat.
(*f*) Sect. hac 21. obſ. 21. §. 8.
(*g*) Ibid. §. 6.

who like our virgin had fallen into a dropſy from a ſuppreſſion of the menſes, " the kidnies, uterus, ſtomach, inteſtines, heart, pericardium, liver, " and ſpleen, abounding (for the number of them exceeded nine hundred)" with pendulous veſicles of this kind: and, in like manner, that Mauritius Cordæus (*b*) found in another woman, all the parts internally, and others, " cover'd, and loaded, on their external ſurfaces, with theſe pendulous cyſts," of different ſizes, and forms, " being fill'd with a citron-colour'd fluid, and, at leaſt, exceeding the number of eight-hundred; not to ſpeak of a third, as the fluid was not yet extravaſated into the belly, who being ſuppos'd to be pregnant, had " the whole body internally, the epiploon, meſentery, liver, ſpleen, lungs, the heart itſelf alſo, and the peritonæum, beſet with veſicles, full of the moſt limpid water," from the obſervation of Ballonius (*i*).

36. You ſee, therefore, that the parts which, in the virgin whoſe hiſtory I have given, were rough with tubercles, have been, in other dropſical bodies, beſet very thickly with hydatids; as the inteſtines, the ſpleen, and the peritonæum. And indeed the laſt-mention'd part is ſometimes cover'd with ſo great a number, that it " ſcarcely comes into view," as Ruyſch (*k*) found it, and repreſented in a figure; or is reſolv'd into filaments, and veſicles full of water, as Paawius (*l*) found it to be reſolv'd, in the cavity of the belly, together with the omentum, both of them being wanting, in their natural ſituations.

But the omentum, although it is a production of the peritonæum, juſt in the ſame manner as the external coat of the ſpleen, and the inteſtines, and hydatids are frequently form'd therein alſo, and that not uncommonly, as many obſervations ſhow, among theſe that of Boſchius (*m*), Malpighi (*n*), Valſalva (*o*), Goekelius (*p*), yet it is of ſo tender a ſtructure, that it cannot often confine them, for a long time, within its laminæ: wherefore they generally ſooner burſt aſunder on their increaſe, and, at the ſame time, tear aſunder, and deſtroy it: and this I conſider as one of the principal cauſes, why, in patients who have an aſcites, the omentum, for the moſt part, as happen'd to the virgin in queſtion, by no means remains found. And from hence Hippocrates, I ſuppoſe, took occaſion to ſay (*q*), " that they, whoſe " liver, being full of water, has diſcharg'd itſelf upon the omentum, have " their belly fill'd with water."

For he who, in brute animals, ſaw hydatids, of the lungs, as I have taken notice of to you on a former occaſion (*r*), obſerv'd thoſe appearances, alſo, in them which I juſt now ſpoke of, that is to ſay, ſometimes, hydatids of the omentum, but more frequently that *eroſion* which Galen requir'd (*s*); and brought the water down from the neighbouring liver, into the omentum, as from the viſcus, " moſt apt," as Galen ſays, " to generate hydatids, in the " membrane that ſurrounds it externally;" inaſmuch as " the liver ſeems, " ſometimes, even in animals that are kill'd without diſeaſe, to be full of

(*b*) Ibid. §. 14.
(*i*) Sepulchr. l. 3. ſ. 37. obſ. 3. §. 12.
(*k*) Theſ. 7. n. 37. & tab. 2. f. 3.
(*l*) Sepulchr. ſ. hac. 21. obſ. 3. §. 8.
(*m*) Ibid. obſ. 21. §. 2.
(*n*) Exerc. de omento.
(*o*) Supra n. 4.
(*p*) Eph. n. c. cent. 6. obſ. 94.
(*q*) S. 7. aph. 55.
(*r*) Epiſt. 16. n. 33.
(*s*) Comment. in aphor. cit.

" them."

" them." And phyſicians, ſince it has been cuſtomary to diſſect human bodies, have not only confirm'd the obſervations of the ancient preceptors in medicine, taken from beaſts, by the inſpection of human bodies; but have alſo retain'd their hypotheſes of the cauſe of the dropſy, often to be deduc'd from water being pour'd out of ruptur'd veſiculæ, in whatever viſcus theſe may be ſuppos'd to exiſt: although even afterwards, they have, every now and then, return'd to brute-animals, if they might happen to ſee ſome things which relate to the examination of hydatids more clearly: and that this has not even been neglected by me, as far as was in my power, you will perceive from what I ſhall ſubjoin.

37. Among the number of the largeſt hydatids, that certainly was one, which Caldeſi (*t*) ſaw in the liver of an ox: for the whole weigh'd nine pounds; and the coats, by themſelves, ſixteen ounces. And as theſe coats were three in number, each of them, in general, conſiſted of many other laminæ, were robuſt, and fleſhy; but the external coat, in particular, more than the others, firm, muſcular, and conſiſting of fibres very much entangl'd with each other: whereas the internal was very weak and thin: and the middle coat, which was of a golden colour, and rugous, had ſome pieces of gypſeous, or rather of bony matter, affix'd to it. The water which was comprehended within theſe coats, being of a limpid appearance, and ſaltiſh in its taſte, was not in the leaſt chang'd, by the mixture of different liquors with it: nor yet did it coagulate by boiling, any more than the liquor of other hydatids, on which he had made this experiment in vain.

If with this ſtructure which I have deſcrib'd, you compare that which Cordæus (*u*) obſerv'd, in ſo many bladders ſeen by him, (for Perſius (*x*) has nothing in regard to the ſtructure, nor yet Ballonius (*y*), except that he remark'd " a triple coat" on each of them) you will eaſily perceive, of how much advantage to Caldeſi, the magnitude of his hydatid was. For Cordæus only ſaw the following things, " that they were made up of two membranes, " the internal very white in its colour, the other very ſimilar to the coat of " the ſtomach, yet ſomewhat thinner, but perfectly of the ſame colour " therewith." To me however, although it cannot be doubted, but that ſome of the appearances which Caldeſi ſaw, were peculiar to that hydatid; it has never yet happen'd to light on any ſo large as I would have wiſh'd: and when I have lit on any, I have not been able to examine them, otherwiſe than externally. Yet, even in this manner, have I remark'd ſome things, which, perhaps, are not unworthy of our diligent inquiry, in others of the ſame nature.

I formerly ſaw one in a calf of fifteen days old, which was round in its figure, of ſix or ſeven inches in diameter, hanging from the flat, and upper, part of the liver, into which, in ſome meaſure, it ſubſided; being cloſely fix'd thereto, to the extent of two or three inches: and from this part to which it was fix'd, did it receive its blood-veſſels, but moſt of them in ſuch a manner, that, as I retain it firmly in my memory, I ſhall relate it to you. For as I could ſee, through the membrane of that hydatid (which, in other reſpects, as I perceiv'd by taking hold of it, betwixt my fingers, was not

(*t*) Oſſervaz. int. alle Tartarughe.
(*u*)
(*x*)
(*y*) Supra ad n. 33.

very thin) not only the water that it contain'd, which was of a greeniſh colour, ſlightly inclining to yellow, but even (as this water was pellucid) whatever ſwam therein; ſo ſome ſmall trunks of veſſels ſeem'd to be carried from the liver, through the middle of the cavity of the veſicle, which, after having reach'd to the oppoſite part thereof, were reflected upon the external ſurface of it, and being divided into larger, and ſmaller ramifications, made a kind of beautiful net-work.

But, although I ſaw this net-work, and thoſe ramifications of blood-veſſels very plainly, and undoubtedly, and very ſlender ſtriæ of fat, as it were, attending upon them; yet as I ſaw thoſe included, and floating trunks, which ſtriæ of the ſame kind ſeem'd to accompany, only through the ſubſtance of the tranſparent membrane, I beg'd of thoſe who ſhow'd me this hydatid, that they would ſuffer me to open it; but in vain, as they ſaid they were willing to ſhow it to ſome other perſons, to whom they had juſt before promis'd the inſpection. And from them, (who either did not properly attend to the included trunks, or did not well obſerve what would follow from that paſſage thereof through the cavity of the veſicle) I could get no other information, than that the water was of a ſaltiſh taſte, and did not at all coagulate on the fire.

Not long after this in the calf, I ſaw another hydatid, leſs indeed than that, for it was not bigger than a hen's egg, yet conſidering the proportion of the animal wherein I found it, much larger. This animal was an old hen-pigeon, which even at this time lay'd eggs, and, though ſeemingly very healthy, was found ſuddenly dead in her neſt. As no cauſe of this unexpected death appear'd externally, upon examining internally, I found the brain, the lungs, and the heart, to be ſound, and without any mark of diſeaſe; except that the ventricles of the brain were entirely empty, and the heart itſelf without blood; when, at length, going on to the liver, I perceiv'd the cauſe of this laſt appearance, and of the ſudden death.

For the liver was ſomewhat livid in general, and, on the upper part, almoſt black, and ſofter than natural; and a large blood-veſſel having been ruptur'd there, a great quantity of blood had been extravaſated about this viſcus itſelf, and the inteſtines, and had coagulated. I ſuppos'd the rupture of this veſſel to have been accelerated by the preſſure of the large hydatid, of which I have already begun to ſpeak. This hydatid had one of its extremities fix'd into the internal ſubſtance of the ovarium; as other leſſer hydatids had alſo, of which I ſhall ſpeak preſently: and through its ſurface ſanguiferous veſſels were ſcatter'd; a yellowiſh water being contain'd within, not comprehended in one cavity, as far as I could judge externally, but divided into many cells, which were tranſparent. To the membrane itſelf, of which the hydatid was compos'd, at the extremity that I have ſpoken of, ſome very ſmall *vitelli* were inherent, very ſimilar to the others, with which the ovarium abounded: yet they were ſomewhat harder than theſe, and inclin'd more to whiteneſs.

From the ovarium, beſide one pretty large egg, which was almoſt ready to fall off, ſome other hydatids were pendulous, perfectly ſimilar to the one I have already deſcrib'd, except that they were about three times leſs, and not connected immediately to the ovarium, but by means of an intervening peduncle,

peduncle, or ſtalk, of a conſiderable length. Finally, there were ſome others, not larger than a very ſmall bean, ſituated among theſe vitelli; but theſe much more white than the others, and full of a limpid water. Yet by boiling, neither this water, nor the yellowiſh water of the others, coagulated: and the eggs, which adher'd to the extremity of that largeſt hydatid, as they had been leſs ſoft before boiling, were, alſo, more harden'd than the others, afterwards. I intended to have examin'd internally, the cells which I had ſeen through the coats of the larger hydatids, but being call'd away on ſome occaſion, a ſervant unſeaſonably diligent, who ſuppos'd that I had examin'd every appearance to my ſatisfaction, threw them all away, in the mean while, to a place, from whence, though I was greatly chagrin'd at the accident, it was impoſſible for me to recover them.

38. Do not be ſurpriz'd that I was ſo much diſpleas'd, at not having it in my power to examine cloſely, into thoſe appearances I had ſeen, in the calf, and the pigeon, through the coats of the hydatids. For the hydatids which ſhow ſanguiferous veſſels paſſing through the middle of their cavity, or this cavity divided into ſeveral cells, you cannot eaſily account for, as to their origin; either from a ſimple glandular veſicle, the orifice of which has been ſtop'd up, or from ſome one interſtice of a lymphatic veſſel, that lies betwixt two pair of valves, being ſhut up on both ſides.

From the time that Wharton made uſe of thoſe interſtices of the lymphæducts, to explain the formation of hydatids, in that manner which has been transfer'd, not once only, but twice, into this ſection of the Sepulchretum (*z*), he has, probably, had not fewer followers, than they who have made uſe of the ſimple gland: and there have even been ſome, who, by making additions to the hypotheſis, have endeavour'd to render it more probable. The induſtry of all which authors I commend: and I even believe, that the great number of veſicles which Perſius (*a*) had ſeen "doubled, as they are taken out in trouts," argue for the opinion of Wharton; ſince they reſembled two interſtices not yet disjoin'd, as thoſe "pellucid little cords, conſiſting of thin veſicles, chain'd "together, as it were," many of which have been ſometimes ſeen in the waters of patients in an aſcites, by Mead (*b*), alſo do.

But, although I do not deny, that hydatids may have their origin, in ſome certain way or other, at one time, from a ſimple gland, and, at another time, from interſtices of this kind; yet I do not ſee how they can all be accounted for from thence. For it is long ago that Ruyſch (*c*) admoniſh'd us, of a great number of hydatids being found in the placenta uteri ſometimes, as I have alſo ſeen, and in other parts, in like manner, wherein no lymphæducts are found. He therefore ſuppos'd "that hydatids were the extremities of "ſanguiferous veſſels, which had chang'd their former nature, and had dege-"nerated into a diſeas'd ſtructure." There are ſome, alſo, who imagine, that if a watery humour flow, not only from the injur'd parietes of the lymphæducts, but from any part whatever, among the ſurrounding membranes, they are conſequently elevated, and form'd into hydatids. And if any one ſhould chooſe to illuſtrate their opinion with a little accuracy, he might, perhaps,

(*z*) Schol. ad §. 8. obſ. 10. & ad §. 2, obſ. 21.

(*a*) Ibid. §. 6.

(*b*) Monit. med. c. 8.

(*c*) Adverſ. dec. 1. c. 2. vid. & theſ. 6. tab. 5. fig. 3. & ſeq.

render

render it proper to explain, and account for, the greater part of hydatids; and would underſtand, without difficulty, from the cellular ſtructure which lies betwixt the membranes, and the ſanguiferous veſſels, which paſs through that ſtructure, from whence it is, that ſome hydatids (*d*) appear to be divided into cells, and why (*e*) veſſels are carried through the middle of the cavity of others: to which veſſels if he ſhould refer thoſe "two ſlender fibres" that Tyſonius (*f*) obſerv'd in ſo many hydatids, "proceeding" from one extremity thereof, "and fluctuating within their liquor," he would probably come much nearer to the truth, than this author, when he conjectur'd hydatids of that kind to be inſects; which ſucking out a nouriſhment for themſelves, tranſmitted it into their belly, by thoſe two little tubes as it were.

And if hydatids, that are pendulous by a long and ſlender ſtalk, ſhould chance to require an explication, I mean ſuch hydatids as Ruyſch (*g*) (who has given a figure of them (*h*)) and others, and I myſelf, have often ſeen, particularly from the ovaria, and the neighbouring parts, of women; and not only thoſe that were pendulous from the ovarium of that pigeon; the ſame perſon will be at liberty to ſuſpect that the other cells of any hydatid, being broken off from the ſmall ſanguiferous trunk, or being collaps'd, in conſequence of having pour'd out the humour they contain'd, one of the extreme cells ſtill remains connected, and ſtill retains its fluid. And, indeed, I have, ſometimes, very evidently ſeen a ſmall ſanguiferous veſſel, paſſing along with the filament, by which an hydatid of this kind was pendulous (*i*).

39. But there are ſtill others to be attended to: and theſe of greater importance likewiſe, not only on account of the diſeaſe in the viſcera, wherein they are generated; but on account of the more eaſy production of that diſeaſe, which I am at preſent ſpeaking of. Hitherto I have, in general, ſpoken of thoſe that are prominent on the ſurface of the viſcera, or pendulous therefrom. Yet there are others which lie latent underneath, or are, at leaſt, not very prominent, for the moſt part; as in the kidnies in particular. I deſcrib'd them formerly in the Adverſaria (*k*), under the title of large cells; and have often told you, in the courſe of theſe letters (*l*), that they have been ſeen both by Valſalva and me.

But I have ſeen this appearance at other times: and not only one of them in a ſow, which was almoſt as large as a nut, but alſo in human bodies, and theſe pretty large. Yet none of theſe, if you except one which I have refer'd to in a certain oſtler or ſtable-keeper (*m*), was rais'd up beyond the ſurface of the kidney; not even that which was ſeen by Valſalva, in the body of an old man (*n*), and which occupied one half of the kidney. And yet I have ſeen others that were prominent, particularly in two old women; the hiſtory of one of whom I will here relate to you, on this account merely, but in a very brief manner.

(*d*)
(*e*) N. 37.
(*f*) In additam. ad hanc Sepulchr. ſect. append. ad obſ. 49.
(*g*) C. 2. cit.
(*h*) Obſ. anat. chir. fig. 68.
(*i*) Vid. epiſt. 43. n. 19.
(*k*) III. animad. 33.
(*l*) Epiſt. 4. n. 19. ep. 10. n. 19. ep. 17. n. 14. ep. 21. n. 15. ep. 24. n. 6. & ep. 25. n. 4.
(*m*) Epiſt. 4. n. cit.
(*n*) Epiſt. 17. n. cit.

40. An

40. An old woman who had an incurvation of the ſpine, and was lame, died in the hoſpital at Padua, after the middle of March, in the year 1747. She had been lately brought thither, on account of a diſorder of the apoplectic kind, which did not appear to have injur'd any other faculty, but that of her ſpeech. Wherefore, as the other diſorders of the woman could not be properly known, and as I was then taken up in other obſervations, relative to parts which were in their natural ſtate; and even continu'd my inquiries in reference thereto, in the body of this woman, I had but juſt opportunity to remark the following preternatural appearances.

In the belly, the trunk of the great artery began, almoſt immediately, after giving off the emulgents, to dilate itſelf gradually more and more, the more it deſcended; till, a little above the diviſion, it expanded itſelf wholly into an aneuriſm, which was of two inches diameter, in every direction. From thence it was again gradually contracted; yet in ſuch a manner that the iliacs themſelves appear'd to be much wider than they naturally are, to a conſiderable extent. The internal ſurface of theſe veſſels was unequal: but the internal ſurface of the aneuriſm ſtill more ſo; where not only polypous concretions were found, but in one part of the coats, bony concretions alſo. I ſhould be inclin'd to ſuppoſe, that the cauſe of theſe diſorders of the aorta, had, in great meaſure, conſiſted in the diſtorted figure of the ſpine; which, having a convexity in the thorax, on the right ſide, had another on the left ſide, in the loins, which carried away the aorta along with it. And for this reaſon I was leſs ſurpriz'd to find, in the left kidney, thoſe diſorders on account of which I deſcribe to you this diſſection.

For from the lower extremity of that kidney, an hydatid, of the bigneſs of a ſmall apple, protuberated. It was full of a rediſh water, although, when look'd at through the ſurrounding coats, it ſeem'd to be blackiſh. Theſe coats were two in number externally; the outermoſt of which was nothing elſe but the adipoſe membrane of the kidney, deprived of its fat, by the very emaciated ſtate of the parts: the other was the proper membrane of the kidney, which, not only the quantity, but alſo the weight of the included water, in conſequence of preſſing from above downwards, in that ſituation, had diſtended. Wherefore, although there were two other leſs hydatids, in other parts of the ſame kidney, they had not rais'd up that membrane beyond the ſurface of the kidney; that is to ſay, they were confin'd under it, like the other more frequent cells, and had hollow'd out a kind of bed for themſelves, in the ſubſtance of the kidney. And a larger hydatid had, alſo, hollow'd out a ſeat for itſelf, in the upper part of the ſubſtance of this viſcus, almoſt in the ſhape of a hemiſphere; ſo that you might perceive it to be of the ſame kind with the others: the diameter of this hemiſphere was equal to the breadth of a man's thumb.

41. The diſſection of another old woman you will have on another occaſion (*o*), in whom the left kidney, in like manner, but at its upper extremity, was greatly extended into an hydatid which had form'd itſelf thereon; as this hydatid contain'd water, of a ſlight yellow colour, to the quantity of four ounces.

(*o*) Epiſt. 60. n. 6.

To the larger veſicles of this kind you will, without doubt, refer that "large watry abſceſs," as Harvey (*p*) call'd it, "like a hen's egg, and fill'd "with yellow water, which had impreſs'd an orbicular cavity" on one of the kidnies; as there were alſo other leſſer appearances, of this kind, on the anterior ſurface of both the kidnies, of a very old man, who had died with a ſuppreſſion of urine. Or, at leaſt, you will refer to this claſs, "a bladder like "a large walnut, diſtended with the moſt limpid water, and inherent to half "its diameter, in the ſubſtance of the kidney", which Doringius (*q*) found in Bucretius; whoſe ſame kidney contain'd a great quantity of ſand, at the ſame time that the other contain'd a calculus.

Two veſicles equal to that, and fill'd with a kind of watry humour, reſembling urine in colour, I remember to have found, formerly, in the body of a man which I diſſected at Bologna, in the anatomical theatre, as a ſubſtitute for Valſalva, in his abſence: and the pelvis of the ſame kidney, in which were theſe veſicles, and three whitiſh calculi, of the bigneſs of vetches, was dilated. I alſo remember that the man died with a ſuppreſſion of urine, in his bladder indeed: but this was not the cauſe of his death; as there were other more conſiderable diſeaſes, which it is not neceſſary to take notice of here (*r*). Theſe two hydatids, however, were confin'd, as moſt of them are, under the proper membrane of the kidney. Nor do they ſeem to have appear'd differently, which Willis (*s*) aſſerts "had been frequently found by "him, in hydropical bodies," where he tells us, that in the body of an illuſtrious man, there was "a large cavity in the middle of the right kidney, diſtinct from the pelvis, much larger than that, and fill'd with limpid water," and that the left kidney "contain'd many hydatids, and cavities fill'd "with a very limpid water."

He conjectures that very ſmall cavities had been firſt form'd in the ſubſtance of the kidnies, by ſerum ſtagnating in ſome part of it; which cavities were more and more dilated, by the gradual increaſe of this fluid: and doubtleſs you ſee that "limpid, very limpid, rediſh" water was found in thoſe cavities. Nor indeed have I been without doubts, at ſeveral times (*t*), although from the colour, and the odour, it more frequently ſeem'd to be urine, whether it was not, rather, "a fluid very ſimilar to urine;" as I was not ignorant, that the ſerum of the blood is either very often, naturally, of a yellowiſh colour, or becomes ſo, by its remora in the viſcera: and that the humour, found in hydatids, is generally ſo, from what cauſe ſoever it may ariſe (*u*); and as I obſerv'd, at the ſame time, that it was poſſible it might contract its urinous odour from the kidnies, wherein it is ſo long retain'd: and that cavities of this kind were every where ſurrounded by an internal and uniform coat; ſo that it was never in my power, or the power of any other perſon, that I know of, to find a manifeſt communication with the pelvis, or tubuli, of the kidney.

Therefore, as to the caſe being quite different in the obſervation of Platerus (*x*), where, on cutting aſunder bladders full of water, which had form'd

(*p*) Sepulchr. l. 2. ſ. 1. obſ. 17.
(*q*) Ibid. l. 3. ſ. 14. obſ. 48.
(*r*) Vid. epiſt. 41. n. 10.
(*s*) Sepulchr. l. 1. ſ. 13. obſ. 1.
(*t*) Vid. animad. ſupra ad n. 39. indicat.
(*u*) Vid. ſupra n. 35. 37.
(*x*) Sepulchr. ſ. hac 21. obſ. 8. §. 2.

them-

themſelves upon the body of the kidney, " the water flow'd out, and the " foramina remain'd open ;" ſo that this is not to be attributed to thoſe bladders, but to the many ulcers, which, as he ſays, had perforated the kidnies, from the internal quite to the external parts ; ſo nothing forbids us to ſuppoſe, that ſome of the ulcers had open'd foramina for themſelves, quite to the cavity of the veſicles. And by this obſervation, we may be led to ſuppoſe another manner, in which thoſe hydatids of the kidnies may much ſooner, and much more certainly, bring on an aſcites, where there are ulcers communicating with the pelvis ; for theſe will reach ſooner to the large cavities of thoſe hydatids, than to the ſurface of the kidnies : and by carrying thither an acrid ichor, and a great quantity of urine, will burſt them, and pour out this fluid into the cavity of the belly ; juſt as they muſt, of themſelves, have pour'd out their contain'd liquor, in another obſervation of Platerus (*y*), and had pour'd it out in that which I have refer'd to above (*z*), from Picolhominus, in conjunction with the former of Platerus.

However, even when there are no ulcers, if theſe hydatids are ſo many in number, or ſo large in their ſize, as to have deſtroy'd, or condens'd, a great part of the ſubſtance of both kidnies ; there is not the leaſt doubt but a dropſy may eaſily happen, by the ſecretion of urine being greatly diminiſh'd. But if they, moreover, burſt aſunder ; diſcharge their contents ; and go on ſtill to generate a freſh fluid ; it is evident that an aſcites muſt happen from thence.

42. Yet if they do not continue to ſecrete a fluid, but coaleſce, in conſequence of a new ſubſtance of the kidney growing up around them, when emptied, a dropſy does not ariſe ; the little quantity of fluid, which they had diſcharg'd, being taken up by the mouths of the abſorbent veſſels, in the ſame manner that the fluid, with which the interior ſurfaces of the belly are moiſten'd, is abſorb'd : yet in the kidney a cicatrix remains, various in its magnitude, and its depth, in proportion as the ruptur'd hydatid had hollow'd out more or leſs of the ſubſtance of the kidney. Read over again the twenty-ninth letter (*a*), in that part where I deſcrib'd, in the kidney of a woman, a long, whitiſh, and almoſt tendinous line ; drawn, not only on the ſurface, but alſo deeply within the very body of the kidney ; ſo ſimilar to the cicatrix of an old wound, that I look'd for the traces of it in the neighbouring paries of the belly, but in vain. And I ſhall deſcribe to you, in other letters, other cicatrices of the kidnies, leſs deep, but depreſs'd ; and theſe comprehended in the circumference of a circle : of which kind that was, which follow'd the coalition of the larger hydatid, taken notice of in the old woman, whoſe hiſtory I gave you juſt now (*b*).

From hence you perceive, by what method we may explain, from the obſervation of hydatids, the cicatrices which are pretty frequently met with, on the ſurface of the kidnies. And ſuppoſe that the cicatrices of other viſcera may, alſo, be explain'd in the ſame manner, when they are external, and neither wounds, nor ſigns of ulcers, have preceded ; as that was, which is taken notice of in this very letter (*c*), as being found in the ſide of the uterus, or

(*y*) Ibid. obſ. 11. §. 4.
(*z*) N. 19.
(*a*) N. 12.
(*b*) N. 40. in fin.
(*c*) N. 28.

an old woman, who had labour'd under an aſcites. For the uterus has alſo its hydatids, ſometimes, in ſuch a number as is ſufficiently ſhown by the obſervations of Adolphus Occo (*d*), and the celebrated Adam Chriſtian Thebeſius (*e*); and ſo large in their ſize, that, as I have hinted to you on a former occaſion (*f*), Coiterus (*g*) ſaw one "hanging from the ſide of the collum uteri, "bigger, to appearance, than the natural bladder, and very full of urine:" or, as he ſays, with more juſtice, below, "full of thin, and tranſparent water, "and furniſh'd, like the natural bladder, with two coats, but without any "meatus whereby to collect, or diſcharge, its contents."

But even cicatrices of this kind, both of the liver, and ſpleen, as, for inſtance, that which Hæchſtetterus (*h*) has deſcrib'd, in a noble virgin (for we muſt take care we are not deceiv'd by certain fiſſures, which often exiſt from the original formation) ſuch cicatrices, I ſay, may be explain'd in a ſimilar manner. For hydatids of both theſe viſcera occur ſtill more frequently, whether they are ſituated quite externally, ſuch as Coiterus (*i*) found in a hang'd man, "under the ſpleen, of the magnitude of two fiſts, very full of "water, and ſeparated from the neighbouring parts, without any injury," or entirely hid deep in the ſubſtance, like thoſe which are ſpoken of as exiſting in the liver, by Glaſſerus (*k*), Diemerbroeck (*l*), and others.

To which claſs, you will certainly refer the obſervation of Lyſerus (*m*), "of "citron-colour'd water, which burſt forth in the quantity of more than three "pints," from the liver of a living jeweſs, when pierc'd deep in its ſubſtance; and that obſerv'd by Mauchartus, which I have already deſcrib'd (*n*), and which he call'd "a dropſy of the ſpleen:" and thus you will obſerve, where it happens that the viſcera are, at length, broken through, by a quantity of humour internally collected, how much they increaſe that dropſy, which exiſted before; and how much theſe viſcera may ſeem to be corrupted, by the ſtagnant water around them, when they have been thus affected, by the fluid they contain'd. Whether, therefore, hydatids are of this ſecond ſpecies, or of the firſt, or, finally, of a middle nature betwixt both, ſuch as we chiefly attend to here; that is, ſo form'd in a viſcus, as to ſhew themſelves, in ſome meaſure, upon the ſurface alſo, they are, as I ſaid, ſtill more frequent in the liver, or the ſpleen.

So I ſaw two of this laſt kind, lately, in the liver of a certain old woman, which was, in other reſpects, ſound, but had its anterior border of a figure which was never ſeen by me before, in this part, that is falciform, about the middle of it; and the left lobe produc'd almoſt as far downwards as the right. Under the membrane, which cover'd the convex ſurface, both the hydatids, in ſome meaſure, appear'd; the remainder of them being hid within the liver, one ſmall, the other pretty large (*o*). Thus I obſerv'd a great number in the ſpleen of a ſow, full of an inſipid, or ſlightly-ſweetiſh water. And thus in the liver of a ſecond, one of the bigneſs of a cherry, not far from its edge.

(*d*) Sepulch. ſ. hac 21. obſ. 55. §. 9.
(*e*) Eph. n. c. cent. 3 & 4. obſ. 117.
(*f*) Epiſt. 16. n. 33.
(*g*) Obſ. anat.
(*h*) Sepulchr. ſ. cit. obſ. 12. §. 2.
(*i*) Obſ. anat. cit.
(*k*) Sepulch. ſ. cit. obſ. 4. §. 11.
(*l*) Ibid. obſ. 19.
(*m*) Apud Bartholin. cent. 2. epiſt. med. 73.
(*n*) Epiſt. 36. n. 18.
(*o*) Vid. epiſt. 65. n. 8. in fin.

Yet

Yet in another, I found them of different ſizes, and in great number; and not only, as in the former, half buried, but many of them even altogether hid, within the ſubſtance: and the water of them all was comprehended in a very thick, and white follicle.

This liver was extremely enlarg'd, and had the whitiſh net-work, by which the lobules are intercepted, very thick; and, for that reaſon, ſtriking even the inattentive eye more than uſual; whether you examin'd it internally, or externally. Theſe lobules were ſound, as the other viſcera ſeem'd to be: but the gall-bladder was extremely contracted, and inſtead of bile contain'd not many drops of a certain mucus, which was ſcarcely ting'd with any colour; ſo as to bring back to my mind, that "almoſt white colour" of the bile, which Veſalius (*p*) aſſerts he had ſeen, before Diemerbroeck, and after him others, who are likewiſe quoted in the Sepulchretum: and others ſince then, had ſeen inſtead of bile, a humour which was "white, lacteſcent, milky."

But not to digreſs from thoſe hydatids of the ſpleen, and the liver, of which I was ſpeaking; perhaps you will ſuppoſe thoſe to belong to that ſpecies, which Hunerwolffius (*q*) deſcribes, in human bodies, "as being *innatæ*, "or form'd within the liver, and ſpleen," beſides others which he calls "*ad-*"*natæ*, or form'd upon theſe viſcera," or thoſe which to Horſtius (*r*) appear'd "to be cavities full of water, in the liver, and ſpleen, of a little boy." And if you deſire to know what ſymptoms had preceded in the living body, you will read them in another obſervation of the Sepulchretum (*s*), in which the ſame diſſection is repeated: and in ſo long a ſection, as this twenty-firſt, it is leſs to be wonder'd at, than in moſt others, that it ſhould have happen'd more than once (*t*): for which reaſon, and, at the ſame time, on account of the fraudulent deſcriptions of Blancardus, it might have been forgiven, that in the Additamenta thoſe are ſet down again, as if they were new obſervations of this author (*u*), which Bonetus had produc'd before in this very ſection (*x*), and had aſcrib'd to their true authors Jodonus and Parey (*y*); if, which even Blancardus himſelf had not done (*z*), one obſervation of Jodonus were not ſeparated into two, the twenty-ninth, and the thirtieth; or rather if from the Scholium of Blancardus on the firſt, the ſecond obſervation were not made. But the obſervation of Eggerdeſus (*a*), which relates entirely to the thorax, ought not to have been introduc'd here by any means, where the queſtion is of diſorders of the belly only; or, at leaſt, what is done in regard to two obſervations (*b*), that, like the former, do not refer to the preſent ſubject, ought not to have been omitted; I mean that notice was taken of the obſervations being produc'd, "out of their proper place."

43. I, however, have a very different reaſon for ſaying a few things here, of the thoracic viſcera. For the viſcera of the belly are not the only viſcera

(*p*) Exam. obſ. Fallop.
(*q*) Sepulch. obſ. 4. cit. §. 14.
(*r*) In additam. ad eand. 21. ſep. ſect. obſ. 82.
(*s*) Sect. ead. obſ. 3. §. 12.
(*t*) Ibid. obſ. 6. §. 7.
(*u*) Confer. obſ. 4. §. 8. cum obſ. 6. §. 12. obſ. 20. §. 12. cum §. 17. obſ. 21. §. 2. cum §. 7. obſ. 55. §. 2. cum §. 17; & §. 13. cum §. 16. et cæt.
(*x*) Obſ. 29. 32. & fortaſſe aliæ.
(*y*) Obſ. 48 & 38.
(*z*) Anat. pract. rat. obſ. 84.
(*a*) In addit. ad hanc ſect. 21. obſ. 61.
(*b*) Ibid. obſ. 76 & 79.

that

that are liable to hydatids of this kind; and what ſeems to me to follow neceſſarily, to cicatrices: that theſe hydatids are form'd upon the lungs, and even upon the heart, I have already ſhewn, from the obſervations of the ancients, the moderns, and even my own alſo (*c*). If, therefore, any one of theſe cicatrices which I have defin'd, occur in either of theſe viſcera, as one certainly did occur to me, on the external ſurface of the heart of a hare (and how frequently this ſpecies of animals is attack'd with hydatids, ſufficiently appears even from the reading of Rhedi (*d*) alone.) What forbids me to account for a cicatrix, from the inanition, and coalition, of an hydatid, in the ſame part wherein I have ſeen an hydatid half-buried in the ſubſtance? Wherefore, you will, likewiſe, deduce the origin of cicatrices in the thoracic viſcera, from hydatids; as I ſaid in regard to the viſcera of the belly.

And that the ſecond ſpecies of theſe (*e*) is, probably, to be acknowledg'd to exiſt in the lungs, you will conjecture from the water collected within them, in a kind of ſacs, as it were; which was twice ſeen even by the illuſtrious Senac (*f*).

44. But here you certainly expect from me another explication of the origin, not of cicatrices, but of certain hydatids; ſuch, for inſtance, as were ſeen by Redi (*g*), in hares, not only buried, in cluſters, within the ſubſtance of the liver, and tied one to another, but alſo under the external coat thereof, and of the whole alimentary canal; and between the membranes of the meſentery, without any coheſion therewith; and even many that were free, and quite unconnected, in the cavity of the belly, like animalcules, which could move themſelves to and fro: ſo that it came into his mind, as it did into the mind of Tyſonius afterwards, as I ſaid above (*h*), to enquire whether they were certain inſects, or rather embryoes of inſects; the latter of which conjectures I ſee is juſtly rejected by Tyſonius; and the firſt, to omit other conſiderations, does not very well agree with the experiments, which have ſhewn that the very limpid water, whereof they are full, never coagulated by the application of fire. But Tyſonius; although very fond of that firſt conjecture, not only for other reaſons, but becauſe the internal coat of his hydatids, which were taken from other animals, had no coheſion with the external, by which it was every where ſurrounded; has, nevertheleſs, confeſs'd that this external coat "was furniſh'd with blood veſſels:" and that all hydatids are not of this kind, particularly thoſe which are found in the ovaria of dropſical women, as they are made of enlarg'd veſicles (or, according to his hypotheſis, of ovula) which are natural to theſe parts; and, in like manner, thoſe which he ſaw burſt forth from the right ſide of a woman (who was then labouring under diſorder, but afterwards perfectly cur'd) when open'd a little below the ſpurious ribs; burſt forth, I ſay, together with a great quantity of limpid water, to the number of five hundred; they being alſo turgid with a water of the ſame kind.

(*c*) Epiſt. 16. n. 33 & 44.
(*d*) Oſſervaz. int. agli anim. vivent. &c.
(*e*) N. 43.
(*f*) Traite du cœur, l. 4 ch. 3. n. 4.
(*g*) Oſſervaz. cit.
(*h*) N. 38.

Hydatids were after this found by Hunerwolffius (*i*), and Hartmann (*k*), by the former in a woman, ſuch as, " beſides a white, gummy liquamen, con- " tain'd, in themſelves, other more ſlender bladders full of lymph ;" but by the latter, in a dog, within one and the ſame membrane, which was that of the omentum, many were found to be comprehended together, ſo that this membrane being pull'd away, the hydatids " ruſh'd forth with a ſlight preſ- " ſure," the liquor of which did not coagulate by boiling, yet had with it " a kind of coagulum ;" and the coat which was proper to each, being made up of many other membranes, was ſo denſe, that, when cut aſunder, it did not collapſe ; and even felt as if it were ſomewhat fat, when touch'd by the fingers : of this fatty matter the hydatids, " when boil'd," exuded a great quantity.

Neither were thoſe, by any means, connected with each other, which that celebrated man, Alexander Camerarius (*l*), found in a conſiderable number, containing a limpid water, and comprehended in a membranous ſac, wherein the ſteatoma of a man's liver was, at the ſame time, included. As I have never yet happen'd to light on hydatids of this kind, I have choſen rather to point out to you, here, the obſervations of others ; which you may eaſily compare together ; than attempt an explanation of thoſe things, which I had it not in my power to examine myſelf. This has been attempted by Hartmann, in regard to his, in the Scholium which he has added (*m*) ; but whether his hypotheſis will pleaſe you, I am very much in doubt. You will rather aſk, whether there are any things in the writings of other very learned men, that you can better approve ; and eſpecially among thoſe, who have written of the inorganic formation of cyſtic tumours, or thoſe who have often ſpoken, in theſe times, of veſicles ſwimming in the fluid of theſe tumours.

However, although in ſome hydatids I have ſeen, through their coats, what I have ſaid above (*n*), and even, in a woman whom I have deſcrib'd to you in a former letter (*o*), have ſeen the thin, internal coat of the hydatids furniſh'd with whitiſh little veſſels, and, in a ſow, form'd into a kind of cells, as it were ; yet I think that the veſicles which are met with by anatomiſts, and are full of water, are not all of the ſame kind, and, therefore, that the origin of different hydatids are to be differently explain'd : and the origin of ſome not, perhaps, in one way only, but in many join'd together. And I would have you, in particular, read over what the celebrated Morand (*p*) has ſeen, and conjectur'd, on the ſubject of thoſe veſicles, which are found in great number, under one coat ; either connected together, or unconnected, and ſwimming in a fluid ſimilar to that which they contain, or pour'd out into the cavity of the belly.

45. And of this kind, in particular, I would have you ſuppoſe thoſe veſicles to be, from which Aretæus (*q*) has ſaid that a peculiar dropſy is form'd. That is to ſay, " certain very ſmall veſicles, in great number, full of a fluid,

(*i*) In additam. ad hanc Sepulchr. ſect. obſ. 82.
(*k*) Ibid. obſ. 83.
(*l*) Act. n. c. tom. 3. obſ. 120.
(*m*) Ad cit. obſ. 83.
(*n*) N. 37.
(*o*) Epiſt. 21. n. 47.
(*p*) Mem. de l'acad. r. des ſc. a. 1722. & hiſt. a. 1723.
(*q*) De cauſ. & ſign. morb. diut. l. 2. c. 1. in fin.

" and

" and proceeding from the place, where an aſcites is generally form'd," which he might even ſee in the human body, when the parietes of the belly were pierc'd through, in order to draw off water; juſt as Tyſonius, as I have ſaid (*r*), ſaw them come forth, in great number, from another part, and as you will read that it happen'd, in ſome meaſure, to Morand (*s*). For as to Aretæus adding, that there were ſome, who " affirm'd bubbles of this kind to have " paſs'd through the inteſtines," into the cavity of the belly, this is the very caſe, if I am not deceiv'd, which he denies his ever having ſeen; and not this dropſy of which he gives the ſign, as Peter Petit (*t*) believed (in conjunction with others) who thought, becauſe he had not ſeen it himſelf, that Aretæus alſo could not have ſeen it.

But they who affirm'd thoſe veſicles to have paſs'd from the inteſtines, into the cavity of the belly, had, probably, found thoſe appearances, in ſome brute animal, which I have ſaid to be ſeen by Redi (*u*); the relation of which being underſtood in a manner ſomewhat different, as frequently happens by thoſe who had heard it, ſo that theſe veſicles were ſuppos'd to have come from the cavity of the inteſtines, Aretæus might be induc'd to add immediately ſuch things as had a tendency to ſhow that the narration, thus underſtood, was improbable. However, the ſign which he has produc'd of this dropſy, that is to ſay, when he writes thus, " if you perforate the abdomen, you " will draw off very little water; for the veſicle on the inſide, prevents the " effuſion, by ſtopping up the orifice: but if you force your inſtrument into " the veſicle, the fluid will again flow out; ſhows the inſupportable difficulty there is to the removal of a diſorder of this kind, unleſs the veſicles ſhould happen to be ſituated in one place, or to be ſo diſpos'd as they were in the woman ſpoken of by Tyſonius (*x*); and, in like manner, in the dropſical ruſtic mention'd by Riverius (*y*): although, in general, where there is a dropſy from hydatids, or with hydatids, of whatſoever kind they may be, ſo that they are in great number, or large in their ſize, the abdomen is perforated in vain.

For beſides that thoſe which have already burſt aſunder, may go on to pour out a fluid, " the opening of one veſicle," as in purſuance of the hint of Tulpius (*z*), Thomas Bartholin (*a*) has rightly admoniſh'd, " does not evacuate " the reſt, although they cohere, in the manner of bunches of grapes; and not only if they are disjoin'd one from another. Therefore, to the other cauſes why this chirurgical operation does not always anſwer, even at the time when all other circumſtances ſeem to be favourable, add this alſo, becauſe, to uſe the words of Ruyſch (*b*), " as it very often happens that there are hyda- " tids in dropſical perſons, they ſeldom or ever recover, if the paracenteſis of " the abdomen is perform'd." This he ſaid on occaſion of a dropſical woman, whoſe peritonæum, and meſentery, were both of them fill'd with hydatids. And that this happens, very frequently, in the meſentery of perſons labouring under an aſcites, is demonſtrated, not only by other more ancient obſervations, but alſo by thoſe more modern ones, contain'd in the volumes of

(*r*) N. 44.
(*s*) Mem. cit.
(*t*) Comment. in cit. locum.
(*u*) N. 44.
(*x*) Ibid.
(*y*) Obſ. hinc ind. decerpt. 15.
(*z*) L. 2. obſ. med. c. 34.
(*a*) Act. Hafn. vol. 1. obſ. 8.
(*b*) Theſ. anat. 7. n. 37.

the Cæſarean Academy (*c*). But in regard to the hydatids of other parts which are in the belly, as I have produc'd quite a ſufficient quantity of examples already, I will add one of the ſtomach, from Jacobus Yongius (*d*), in that woman whoſe wonderful caſe you cannot explain, unleſs you ſhould have your eye to that cauſe which we generally have an eye to, in the diabetes. For as, through the whole courſe of the diſeaſe, ſhe made almoſt as much water as ſhe drank of fluids, it does not well appear from whence the water could proceed, two hundred and fourteen quarts whereof were diſcharg'd within eight months, by the operation of the paracenteſis, which was repeated to the nine and twentieth time, in that ſpace. This woman, therefore, had a great number of hydatids on the ſtomach, and inteſtines.

46. As the obſervations which I have, relative to the tympanites, will come in more conveniently on a future occaſion, by reaſon of the diſorders complicated therewith, I ſhall chooſe to ſubjoin, in their ſtead, two which relate to the dropſy of the peritonæum; a diſeaſe (to premiſe a few things upon that head) which has, in fact, not been deſcrib'd by the moſt ancient authors, nor yet was firſt ſpoken of by Tulpius (*e*), nor Bogdanus (*f*), as they themſelves ſeem'd to believe, and moſt authors have ſuppos'd. I do not ſay this, becauſe Stratenus had ſaid to Tulpius, that he had ſeen ſomething very ſimilar to it, as Tulpius himſelf readily confeſſes; nor becauſe Stalpart (*g*) affirms that ſomething of this kind was ſaid by Marcellus Donatus.

For Marcellus (*h*), although he ſhows, in oppoſition to Fernelius, that the waters, of hydropic patients, are brought by inviſible paſſages into the cavity of the belly; and ſays that, although this cavity is the more proper receptacle of theſe waters, "it is nevertheleſs prov'd, by diſſection, that betwixt "the peritonæum, and the other parts which conſtitute the lower belly, a "portion of water is very often found." And that you may be in no doubt what theſe other parts are, he immediately adds this which is very improperly omitted by Stalpart: "ſo that ſome of the followers of the Arabians "contend, that the general ſituation of the water, in an aſcites, is betwixt "the ſiphac and the mirach" (that is betwixt the peritonæum, and the parts that lie in contact with it externally) "and we even ſee, that in "thoſe who are troubled with this diſorder, the water reaches to the hips, "the legs, *& cæt.*" From this inſtance then, you ſee what portion of water he ſuppoſes to have been found even in thoſe parts; that is to ſay, the water which naturally reaches thither, when an anaſarca is join'd with an aſcites.

For in regard to that opinion of ſome, who differ, very widely, from their teachers, Haly (*i*), and Avicenna (*k*); neither is this obſervation proper to prove it, nor is any other produc'd by Donatus: although Stalpart ſays that Donatus, after having aſſerted a dropſy to be ſometimes brought on by drinking plentifully of cold water, if "it be carried into the humid perito-

(*c*) Dec. 3. a. 9. & 10. obſ. 239. & cent. 3 & 4 obſ. 117. & act. tom. 2. obſ. 34. & cæt.
(*d*) Vid. in act. erud. Lipſ. a. 1713. m. jul.
(*e*) L. 4. obſ. med. c. 44.
(*f*) Obſ. anat. chir. 11.
(*g*) Part. 1. cent. 2. obſ. rar. 28. in ſchol.
(*h*) De med. hiſt. mirab. l. 4. c. 21.
(*i*) Theor. med. l. 9. c. 31.
(*k*) C. 5. ſupra ad n. 33. cit.

" næum," that Donatus, I ſay, continues to ſpeak, as follows: " Jacobus " Camenicenus in his letter written to Andr. Matthiolus, in the fifth book " of his epiſtles, tells us of a certain perſon, in whom water had been col- " lected betwixt the coats of the peritonæum, and of the inteſtines." For Donatus (*l*), after having copied from Aretæus (*m*), who is expreſly quoted, thoſe words that relate to a fluid being then carried into the peritonæum, not to be collected there, but that from thence " the drops may be effus'd " into the ilia," to produce an aſcites; which drops were before converted into " vapour, and carried off by tranſpiration;" after having copied theſe words then, likewiſe, and having added many other things, which by no means relate to the peritonæum, but to the imbecility of the viſcera, in perſons who labour under an aſcites, and to the obſtruction of the veins of the liver; in order to prove this he at length makes uſe of that obſervation, of Camenicenus, of ſtones obſtructing thoſe veins, in a dropſical man," in " whom water had been collected, between the peritonæum, and inteſtines."

For thus Donatus himſelf, with juſtice, writes, as Matthiolus does alſo, when, in his anſwer to Camenicenus, he interprets theſe words of his, " when we " had gone through the muſcles of the abdomen, we found that kind of " water, which is call'd citron-colour'd, betwixt the peritonæum, and in- " teſtines: which however I ſee is doubted of by ſome;" that is by the followers of the Arabians, who were juſt now ſpoken of, and who thought that the water, of patients in an aſcites, was not betwixt the peritonæum, and the inteſtines, but betwixt the peritonæum, and the external parts. And theſe inquiries I have proſecuted the more fully, becauſe I find that many have aſcrib'd the obſervation of the dropſy of the peritonæum, to Camenicenus, and Donatus; without turning to theſe authors; and in conjunction with Stalpart, whom they have follow'd without mentioning his name; among whom is Nuck (*n*), and he who has ſaid that he had compar'd his own obſervation of this diſeaſe with that of Donatus, which is no obſervation at all.

47. Who then, do you ſay, found this appearance before Nicolaus Tulpius? Joannes Acholzius, a phyſician, and primary profeſſor, at Vienna. For this gentleman, in the year 1581, having preſided at the diſſection of a dropſical woman, in the preſence of the imperial phyſicians, and ſurgeons, found a great quantity of water, like a lixivium, not in the cavity of the belly, but betwixt the peritonæum, and the integuments of the belly; the muſcles, that is to ſay, being ſo far extenuated by the diſtention of the water beneath, that, as is often the caſe, " they ſeem'd to be almoſt anni- " hilated;" or being even, in ſome meaſure, chang'd into a certain continued body, made up of veſicles, fill'd with water, mucus, and glandular matter, which compos'd the anterior paries of that very large ſac: whereas the internal was made up of a membrane, with which all the viſcera were cover'd, in ſuch a manner, that before this was cut into, there ſeem'd to be no viſcera at all.

Read, I beg of you, the obſervation more fully deſcrib'd in this ſection of the Sepulchretum (*o*), although confus'd with circumſtances relating to other ſubjects, and you will very plainly perceive, that this was a dropſy of

(*l*) C. 21. cit.
(*m*) C. 1. ad n. 45. ſupra cit.
(*n*) Ade. cur. c. 9.
(*o*) Sect. 21. obſ. 21. §. 16.

the

the peritonæum, from water flowing out of theſe glandular tumours; to the diſorder of which, and of this membrane, thoſe miſerable pains, wherewith, upon the great increaſe of the diſeaſe, the woman had been continually tortur'd, are certainly to be aſcrib'd. Nor was this hiſtory firſt publiſh'd in the Sepulchretum, but was extant from the year 1598 among the *Conſilia Medica*, publiſh'd by Scholzius (*p*); that is in a book, which went through more than one edition, and which was in the hands of almoſt every one: particularly in the laſt age.

But I have even obſerv'd other obſervations in the Sepulchretum, which were made before that of Tulpius; and which may, or ought to be, refer'd to the ſame diſeaſe: although nobody has ever yet taken notice of them, as far as I know, at leaſt, when he was mentioning the others. That of our Spigelius perhaps may, who, when he was in Moravia, remark'd "a ſpurious "dropſy," in a woman, "betwixt the abdomen properly ſo call'd, and the "muſcles which are curv'd inwards as it were." (Should he have ſaid were curv'd inwards? Or was the caſe as it is in the obſervation of Acholzius?) From thence (which circumſtance is omitted in the Sepulchretum) "ten "pints of a black fluid flow'd." This was done in the year 1614, altho' it was publiſh'd by Rhodius (*r*) forty-three years after.

But, unleſs I am greatly deceiv'd, that which Hoechſtetter (*s*) had obſerv'd in a noble virgin, belongs entirely to the claſs I ſpeak of: this obſervation was made in the year 1628, although publiſh'd many years after by his grandſon; and although the author ſuppos'd the anterior part of the ſac, wherein a great quantity of thick and fœtid humour was contain'd, to be the peritonæum, and the other part, wherein he found many glandular tumours, among which four of the largeſt were purulent, to be the omentum. For as he ſays that this internal part of the ſac was "a membranous expanded "body, wherewith all the viſcera and the inteſtines were cover'd," I believe that it was the peritonæum, notwithſtanding it might poſſibly have the omentum agglutinated to it. But this you will better judge of yourſelf, for you have both an obſervation, and a ſcholium, in the Sepulchretum (*t*), in which ſome parts of this hiſtory are contain'd.

48. And I would moreover have you read, very attentively, in the ſame book, two obſervations of Paawius (*u*), and one of Dodonæus (*x*): and when you read them I would have you obſerve, whether any ſuſpicion begins to ariſe in your mind, that any one thereof relates, in ſome meaſure, to the diſorder whereof I treat at preſent. For Paawius, in two hydropic women, one diſſected in the year 1601, and the other in the year following, found "not the leaſt traces" of the ſpleen, kidneys, and liver itſelf; except that, in one of them "the venous ducts only," of this laſt-mention'd viſcus, "re"main'd, and they but very few in number."

How much leſs ſurprizing is it, if we ſuſpect that the peritonæum was diſtended by a great quantity of water; and that, inwardly, in theſe places

(*p*) Conſ. 339.
(*q*) Sect. cit. obſ. 12. §. 6.
(*r*) Cent. 3. obſ. med. 6.
(*s*) Obſ. med. dec. 10. caſ. 7. cum ſchol.
(*t*) Obſ. cit. 12. §. 2.
(*u*) Sect. cit. obſ. 70, & 71.
(*x*) Ibid. obſ. 20. §. 10.

where it happen'd to be moſt attenuated, and leſs connected with ſome of the viſcera, it had burſt; and that where it was not thus attenuated it had remain'd; and that therefore ſome of the viſcera appear'd, in ſome meaſure, but others were entirely hid; and that theſe few veins belong'd to the peritonæum itſelf (*y*): and that Paawius, in a very haſty "opening of the belly," as he himſelf ſays it was, the bodies being in a very bad ſtate, had not inquir'd accurately into the caſe. And Dodonæus, in regard to a woman who had been troubled for two years, with a very conſiderable tumour in her belly, which when open'd did not diſcharge water, but black inteſtinal ſordes, like thoſe which have lain in dunghils; and theſe in the quantity of more than ſixty pounds; readily confeſſes, that, in ſuch a confuſion of filthineſs, it was not poſſible to find out from what injur'd inteſtine they had proceeded; yet that all the viſcera, except the omentum, which had been diſſolv'd into putrid fragments, were entirely ſound: but that the peritonæum was fiſſur'd, in ſome places, from the ſuperior to the inferior parts.

Here, I confeſs, it is not at all to be wonder'd at, that the fæces had flow'd out of the inteſtine, which was at length injur'd, and had polluted the waters of a dropſical woman, which had been long-collected. But it is very ſurprizing, that ſo large a tumour of the belly had afflicted the patient for ſo long a time, "with a healthy-colour'd countenance, without any "marks of diſeaſe appearing in the urine," and without any ſwelling of the feet. Theſe are marks, as we ſhall ſee below (*z*), of the dropſy of the peritonæum, wherewith this alſo agrees much more eaſily, that the viſcera ſhould preſerve their ſoundneſs for ſo long a time. Moreover, that the peritonæum, being driven inwards, may adhere to ſome inteſtine, and communicate its diſeaſe in ſuch a manner, as to ſuffer the fæces to paſs over into the fluid with which the peritonæum is diſtended, the obſervation of the celebrated Chomel (*a*); which was taken from a woman alſo, whoſe belly, like the other woman's in queſtion, had begun to ſwell after child-birth; demonſtrates.

I ſhould ſuppoſe, therefore, that you may eaſily ſuſpect the peritonæum to have been, at length, burſt aſunder, as they ſaw it; and an aſcites to have been ſuddenly brought on, from a long dropſy of this membrane (*b*); and that the injury of the inteſtine being increas'd at the time of this rupture, the fæces had, during the latter days of the diſeaſe, flow'd in great quantity into the cavity of the belly. And this obſervation of Dodonæus was publiſh'd by him, together with others, in the ſame year in which Acholzius made his; that is in 1581: for it is very evidently a typographical error, where, in *Lindenius Renovatus*, his obſervations are ſaid to have been publiſh'd in the year 1518, as it is acknowledg'd that the author was born in the year 1517: which is a circumſtance I ſhould have taken no notice of here, if I had not obſerv'd that the ſame error had alſo paſs'd into the *Bibliotheca Scriptorum Medicorum*.

An obſervation was alſo extant in Riolanus (*c*), and not only in the laſt editions of his Anthropographia, "of water being extravaſated betwixt the pe-

(*y*) Vid. infra, n. 56. in fin.
(*z*) N. 58.
(*a*) Mem. de l'acad. r. des ſc. a. 1728.
(*b*) Vid. infra n. 52.
(*c*) Vid. ſupra n. 33. in fin.

"ritonæum,

" ritonæum, and the muſcles of the abdomen." But leſt you ſhould ſay that it ought to be explain'd, in the ſame manner as I have explain'd thoſe words of Donatus (*d*), I choſe rather to paſs over it in this place.

49. Finally, in the year 1651, the diſeaſe we are ſpeaking of, was ſeen by Tulpius, and ſoon after communicated to the public, under the new name of *Hydrops Peritonæi* (*e*); in which publication it is expreſly affirm'd, " that " all the congeries of waters had lain betwixt the two coats of the peri- " tonæum, which had put on the thickneſs of the ring-finger." The ſame hiſtory, leſt you ſhould, like a certain perſon, believe it to be another, was publiſh'd afterwards by him who diſſected the body, Job Meekren (*f*); but he publiſh'd it more at large, and told us that Walæus was the only one, out of ſo great a number of phyſicians, who had conjectur'd the true ſituation of this dropſy, while the patient was yet living. Nevertheleſs, Tulpius has ſomething which is not to be found in that more full deſcription: for which reaſon his deſcription might alſo have been transfer'd into the Sepulchretum, and that diſtinctly from the other; rather than that one ſhould have been made of them both, as you will ſee is done by Stalpart (*g*), in ſuch a manner, that you are often ignorant what Tulpius, and what Meekrenius, has ſaid.

Bogdanus (*h*) alſo, in a woman diſſected by him, obſerv'd the peritonæum to be " of the thickneſs of a man's thumb, rugous and rigid;" which circumſtance, together with the remarks that are immediately added of the viſcera, are very improperly omitted in the Sepulchretum (*i*). But he has aſſerted that there was a fluid like lees of oil, not contain'd betwixt the coats of the peritonæum, but " contain'd betwixt the coat of the muſcles of the abdo- " men, and the peritonæum." That is to ſay, what Tulpius, and moſt others after him, took for the exterior lamina of the peritonæum, he took for the coat of the muſcles, with Berengarius (*k*), who taught formerly thus: " It is true that, as far as appears to the ſenſes, there is one very thin pel- " licle, betwixt the true ſiphac" (that is the peritonæum) " and the broad " muſcles of the belly; particularly in the fleſhy part of the muſcles: which " pellicle is the panniculus that involves the muſcles, and other parts round " about."

And I ſee that this pellicle is now ſuppos'd, by many, to conſtitute, in part, the cellular contexture of the peritonæum; which cells being ruptur'd by the diſtending water, a cavity is made " betwixt the peritonæum, and " the tendons of the tranſverſe muſcles," or, as others more properly ſay, " and the tranverſe muſcles." But whether the peritonæum has no exterior lamina, beſides this contexture; or whether this contexture, itſelf, may not be call'd a lamina, it is not a proper occaſion now to enquire. It is ſufficient to have ſhown, that, before theſe latter times, there were not wanting ſuch as plac'd the ſeat of this dropſy betwixt the peritonæum, and the muſcles. It is true, in what year Bogdanus wrote theſe things I do not know: but they were, however, publiſh'd by Bartholin (*l*), in the year 1665. Yet even

(*d*) Supra n. 46.
(*e*) Obſ. ſupra ad n. 46. cit.
(*f*) Obſ. med. chir. c. 52.
(*g*) In ſchol. ſupra ad n. 46. cit.
(*h*) Obſ. ibid. cit.
(*i*) Sect. hac 21. obſ. 12. §. 4.
(*k*) Comment. 5. in Mundin. anat.
(*l*) In 2. edit. cultri anat. Lyſeri.

twelve years before, it was not doubted by Olaus Rudbeck (*m*), but a dropſical tumour might be generated " betwixt the muſcles of the abdomen, " and the peritonæum." And in the year 1667 Gerard Blaſius (*n*) found water in the body of a virgin, " betwixt the muſcles of the abdomen, and " the peritonæum."

Yet this author thought that the ſame thing might alſo happen, betwixt the two laminæ of the peritonæum. And this would be ſaid to have happen'd in moſt of the obſervations, if they who ſay that the cellular contexture is broken aſunder, had not in their power to anſwer, that the external part of this texture, which adheres to the muſcles, is frequently, at that time, become ſo thick, and ſo denſe, as to be taken for another lamina of the peritonæum, and even ſometimes for the whole peritonæum: which ſeems to have happen'd to Hoechſtetter (*o*), and others, among whom is Paulus Mothius, whoſe obſervation on a matron is ſo propos'd by Bartholin (*p*), as if a great quantity of water had been collected betwixt the peritonæum, and a pretty denſe membrane covering all the viſcera, and filled with copious and large veins; in which membrane, a large abſceſs had been form'd about the region of the liver: whereas three leſſer abſceſſes occupied the lower part of the membrane, near to the groins.

This obſervation was publiſh'd in the year 1657. And I have pointed out the year in which every one of the obſervations, that I have mention'd, was made public: in order to convince you, that the greater part of them were in the hands of all perſons, before the year 1688: in which year Drelincurt was created public profeſſor, in that place, where one of his diſciples, when he wrote at large, that hiſtory of the dropſy of the peritonæum, received from Drelincurt, which is added, in the additamenta, to this ſection of the Sepulchretum (*q*), has ſaid what is quite unworthy of his very learned preceptor, " that not the leaſt ſhadow of a ſimilar event is extant, either among the an- " cients, or among the moderns, the celebrated Tulpius only excepted."

50. But now it will be ſufficient to point out the obſervations of this dropſy, which were publiſh'd from that year 1688, quite down to the year 1692, in which Nuck (*r*), the ſucceſſor of Drelincurt, publiſh'd his own; which had been before communicated to Stalpart, and publiſh'd by him (*s*). And there were, beſides thoſe of Hoechſtetter, and Blaſius, which I have ſpoken of above (*t*), the three which you will ſee are, as moſt of the others are, transfer'd into the Sepulchretum (*u*), from Scultetus, Helwigius, and Sponius: to theſe you will add one of Kniſelius (*x*), which you will not be ſurpriz'd to find omitted in the Sepulchretum, when you obſerve that the obſervation of Nuck is wanting alſo! and from the time that Nuck (*y*), by his ſkill, and induſtry, illuſtrated this diſeaſe, there came out, in the firſt place, three obſervations which are copied in the Sepulchretum, one of Gahrliepius (*z*), a

(*m*) Exerc. anat. exhib. duct. hep. aquoſ. c. 9.
(*n*) P. 1. obſ. med. 18.
(*o*) Vid. ſupra n. 47.
(*p*) Cent. 4. hiſt. anat. 25.
(*q*) Obſ. 41.
(*r*)
(*s*) Cit. ſupra ad n. 46.
(*t*) N. 47. & 49.
(*u*) Sect. hac 21. obſ. 12. §. 1. & in addit. obſ. 25 & 48.
(*x*) Apud Zeller. diſſ. de vaſ. lymph. admin. c. 1. n. 13.
(*y*) C. ſupra ad n. 46. cit.
(*z*) In cit. addit. obſ. 81.

ſecond

ſecond of Drelincurt, which I mention'd juſt now (*a*), and a third of Simon Zylius, which is join'd with the laſt.

But the other obſervations could have no place in the Sepulchretum, in conſequence of their being publiſh'd after the ſecond edition thereof; that is to ſay, thoſe which were given by ſeveral authors, one by each: as by Littre (*b*) in the firſt place, who added an explanation of the diſeaſe, its ſigns, prognoſis, and cure, with more accuracy than others to that time; and afterwards by Hieronymus Laubius (*c*), Lucas Schrockius (*d*), John Palfin (*e*), from the communication of Favelet, and by other celebrated men, as Jo. Georg. Hoyerus (*f*), Jo. Hermann Furſtenau (*g*), Jo. Chriſtoph. Pohlius (*h*), and, finally, by Jo. Henr. Reſpingerus (*i*). The obſervations, therefore, of theſe authors, and of all thoſe who are mention'd above, were in my hands, when I ſaid to you, and did not in the leaſt doubt, but others might exiſt beſides, both of the antients and the moderns.

Among the reſt, nevertheleſs, do not imagine that I here forget to recount the obſervation which Chomel (*k*) has given, greatly to the praiſe of his ſkilfulneſs and dexterity, where he alſo adds a ſecond; but both of them taken from the living body only. I, however, in this recital, according to the order of time, have purpoſely omitted to number them amongſt the others, as I alſo have, two in particular, which were produc'd by Nuck (*l*); one from Bartholin, as if it had been his, and not Brechtfeld's; and another from a phyſician who was his friend; not becauſe I judge them to be without their uſefulneſs to thoſe who treat of this diſeaſe (for I myſelf have made uſe of one of them, as far as was proper, above, and ſhall perhaps make uſe of one below) but becauſe neither of them is confirm'd by anatomical inſpection.

But theſe four laſt-mention'd obſervations, and others of the ſame kind, which will be produc'd below, were taken from women, as the others were alſo; not only thoſe that are pointed out by Rudolphus Jacobus Camerarius (*m*), who had taken notice of the very ſame thing, but all the others, moreover, that have hitherto been mention'd by me, or will be mention'd hereafter: inſomuch that as yet, if you except juſt one example (*n*), a dropſy of the peritonæum has not been obſerv'd, except in the female ſex. Of which circumſtance, and of others, that I have peculiarly obſerv'd, in comparing ſo great a number of hiſtories with each other, I ſhall ſay ſomething preſently, after I have firſt, of all the Italians, as far as I know, added the two hiſtories which I promis'd you; leſt you ſhould ſuppoſe, that, as out of all theſe women there was no Italian, our women are not ſubject to this diſorder; which is pretty rare indeed, ſo that neither Valſalva, nor I, have hitherto lit on it in diſſection; yet not ſo rare, but that our Mediavia has ſeen it twice in this hoſpital, and communicated both of the obſervations to me, in the following manner.

(*a*) N. 49. in fin.
(*b*) Mem. de l'acad. r. des ſc. a. 1707.
(*c*) Eph. n. c. cent. 4. obſ. 162.
(*d*) Earund. cent. 5. obſ. 23.
(*e*) Anat. du corps hum. p. 1. tr. 2. ch. 4.
(*f*) Act. n. c. tom. 4. obſ. 32. & tom. 5. in obſ. 68.
(*g*) Earund. t. 8. in obſ. 78.
(*h*) Ibid. obſ. 111.
(*i*) Act. Helvet vol. 1.
(*k*) Mem. de l'acad. r. des ſc. a. 1728.
(*l*) C. cit.
(*m*) Biga obſ. med. c. 1.
(*n*) Vid. n. 59.

51. A woman not yet advanc'd in age, and of a good complexion, had a tumour of the whole belly. She ſaid that before this happen'd to her, a kind of tumour might have been felt at the left ſide of the navel, unequal in its ſurface, and of ſuch a magnitude, that it equall'd almoſt the breadth of her hand, when laid upon it. When ſhe was ſuppos'd by ſome to have an aſcites, for this very reaſon, which was doubted of by others on account of the natural colour of her face, ſhe died.

The tranſverſe muſcles of the abdomen being cut into, a great quantity of very ſtinking water burſt forth, which was ſeparated, from the cavity of the belly, by the peritonæum. This being exhauſted, the tumour of which the woman had ſpoken came into view; having been generated in the peritonæum, and conſiſting of two or three large bladders, as it were: the parietes of which were ſo thick, that upon drawing out the water they contain'd, they did not at all ſubſide, or collapſe.

52. Another woman, about twelve years after the former, that is in the year 1725, came into the hoſpital in conſequence of her being troubled with a diſeaſe no leſs inveterate, but even more ſo. For ſhe ſaid that when ſhe was forty years old, and ſhe was at this time in her fiftieth year, ſhe was troubled with certain tumours in the upper part of her belly, which lay at a diſtance from each other, and were not free from pain, if they were touch'd: and that theſe tumours, notwithſtanding a great number of different remedies were applied, both externally, and internally, had increas'd; and ſhe had continually grown worſe. Even then, although the whole abdomen was diſtended, it was eaſy to diſtinguiſh the tumour with the eye, as well as with the hand; for the tumours that had been before disjoin'd, had coaleſc'd into one unequal tumour, which, when touch'd, gave pain, and was plac'd betwixt the cartilago enſiformis, and the navel: yet ſo as to touch neither of them. The colour of the ſkin, in that part, was the ſame as in others: and if you attempted to lay hold of it with your finger, and raiſe it up, you could not do it; ſo that, for this reaſon, ſome ſuppos'd the tumour to be in the muſcles of the abdomen themſelves. But others; conſidering the colour of the countenance, which inclin'd to yellow, and the very great difficulty of reſpiration of which the woman, in particular, complain'd; ſuppos'd it to relate to ſome diſorder of the viſcera. Yet there was no mark of the ſtomach or inteſtines being injur'd. In the mean while, black vomitings being added to the ſlight fever with which ſhe was troubled, death put an end to her miſerable life.

The integuments, and muſcles of the belly, which was obſerv'd to be leſs tumid than it had been in the living body, being accurately ſeparated; and with theſe even the tendon of the tranſverſe muſcles; a thin membrane appear'd to lie under the tendon, and fleſh, of theſe muſcles, between which, and another, that in thickneſs was equal to one line of the inch of Bologna, was comprehended a cavity containing a tumour, not only form'd on the external membrane, but alſo extending itſelf downwards, and to both ſides; ſo as to contain a great deal of water, in colour like to that wherein freſh meat has been waſh'd, of a very filthy ſmell, and of a purulent thickneſs, in the part where it had ſubſided: the quantity of this water might be computed

at

at about thirty pints, not ſo much from that which was found in this cavity, as from what had been extravaſated into the cavity of the belly; the lower membrane, of this morbid cavity, being eroded over againſt the ſtomach: and this I ſuppoſe to have happen'd about the latter end of the diſeaſe, from whence the abdomen appear'd to be leſs tumid.

However, this peculiar tumour of the epigaſtrium was made up of a firm, and hard ſubſtance, of a white colour inclining to yellow, wherein a few cells were, in ſome places, obſerv'd. And the membranes, ſurrounding the cavity, had already begun to be eroded in more places than one, and to grow black on the ſurfaces, by which they were turn'd towards each other; and on the ſame ſurfaces they were rough, and unequal. But on the ſurface, by which the lower membrane was turn'd towards the belly, it was ſmooth, unleſs where any part of the omentum, and the large inteſtine, was connected to it; which connection, however, was not very firm. There was, alſo, a kind of ſmall rope, as it were, connected, on one hand, with the ſame membrane, and on the other, with the lower vertebra of the loins; which, when diſſected, pour'd out blood. Moreover, the inteſtines were in ſome meaſure inflam'd: but the omentum, and the other parts of the belly, were ſound; if you except the liver being of a pallid colour, and grating, as it were, under the knife, as if ſandy particles had been mix'd with its ſubſtance.

53. Now ſince we have a ſufficient number of obſervations on the dropſy of the peritonæum (to ſet aſide thoſe which leave ſome room for doubt) to compare one with another; it is ſomewhat leſs difficult to add a few things in relation to the cauſes, nature, ſymptoms and cure thereof.

In relation to the cauſes therefore; where Nuck *(o)* has ſaid that the branches of the lymphæducts creep betwixt the muſcles of the abdomen, and the peritonæum, as Rudbeck *(p)* had alſo ſaid; and even has clearly demonſtrated, that they run betwixt the two laminæ of the peritonæum; and purſued his invention, by ſuppoſing that theſe branches, being obſtructed, from any cauſe whatever, are form'd into hydatids, from which, when ruptur'd, a dropſy of the peritonæum ariſes; he has immediately, alſo, added this, that gluttons, and women who bear children, are particularly liable to this danger of obſtruction.

For that, in both of theſe claſſes, the muſcles of the abdomen, being immoderately diſtended, give a reſiſtance, on one hand; and, on the other, the ſtomach, and inteſtines, or the uterus, by its fullneſs, force outwards; ſo that the lymphatic veſſels being intercepted betwixt this preſſure, and that reſiſtance, it is eaſy for us to conceive, that ſome of the neareſt branches, of theſe canals, may be ſometimes ſo diſtended, by the retarded lymph, as to be burſt aſunder. And indeed in many of the obſervations juſt now quoted, we read that this dropſy had happen'd to thoſe women, who had been mothers of many children; and even to ſome a little after abortion, or a difficult birth, as in the obſervation of Kniſelius *(q)*; and indeed immediately, or almoſt immediately, after birth, as in the obſervations of Dodonæus *(r)*,

(o) C. 9. ſupra ad n. 46. cit.
(p) C. 9. ſupra ad n. 49. cit.
(q) Cit. ſupra ad n. 50.
(r) Cit. ad n. 48.

and Chomel (*); if you think that they really and ſtrictly belong to this claſs.

Yet, although I readily admit uterogeſtation among the cauſes of this dropſy, I cannot, however, underſtand why this diſorder has been but once obſerv'd in any other bodies, but thoſe of women. Nor were all theſe patients child-bearing women: and ſhe, of whom Furſtenavius (*s*) gives the hiſtory, was certainly barren; as many of them were virgins, which is demonſtrated by the hiſtories of Hoechſtetter (*t*), Stratenus (*u*), Drelincurt (*x*), Schröckius (*y*), Palfin (*z*), Hoyer, (*a*), and even Tulpius (*b*): for the woman deſcrib'd by him had always, even before ſhe married, had, "from her early years, a very tumid ſtate of the belly," as is related by Meekrenius (*c*). Shall we therefore return back to that other cauſe, and ſuppoſe all theſe virgins to have been great gluttons? But this is not even a vice that happens among women, except very rarely; and as to the males among whom it frequently happens, we know of no more than one hitherto, who has been found to be affected with this diſorder.

54. You will conjecture, perhaps, that another cauſe ought to be added, which is peculiar to women; eſpecially that which Camerarius hints at (*d*), when he ſays that he had read "in almoſt all" the hiſtories of this diſeaſe, that the bag, in which the water was contain'd, had been connected with the ſide of the uterus in particular, or its appendages; therefore that he, in the woman deſcrib'd by him, had deriv'd from thence, the origin of the bag, which was not ſo much connected in any other part, as in the ſeat of one of the ovaria, and of the tube, which two parts were likewiſe wanting. Thus his ſon, alſo, after that (*e*), deſcrib'd the beginning of another bag connected with the right ligaments of the uterus, and the right ovarium; or rather with their ſituation, or remains, as they themſelves were obliterated.

But I ſee that Meekrenius (*f*) had, before, obſerv'd the ſame ovary to be deficient; and even its tube producing itſelf into the peritonæum, of which the bag conſiſted, and degenerating into it; as he has repreſented by a figure: and that Gahrliepius (*g*) had made uſe of this very ſame word, when he ſignified that the ſame parts, and the ligament which lies betwixt the ovary, and the tube, were carried away into the peritonæum, which was continued from thence, and in which many bags were comprehended. I omit others, and among theſe Laubius (*h*), by whom the ſac of the peritonæum, which he deſcribes, is ſaid to have a very firm connexion about the fundus uteri, though eaſily ſeparable in other parts, by the fingers alone: and even Littre (*i*), the interior membrane of whoſe ſac was connected with no other viſcus, but with the extremity of the left Falloppian tube; which being firmly fix'd to it, had been ſo ſtretch'd as to become twice as long as it naturally is.

But I cannot help taking notice of Sponius (*k*), as the obſervation he has communicated ſpeaks of a ſac, that could not only be ſeparated from all the

(*) Cit. ad n. 48.
(*s*) Ad n. 50.
(*t*) Ad n. 47.
(*u*) Ad n. 46.
(*x*) Ad n. 49.
(*y*) (*z*) (*a*) Ad n. 50.
(*b*) (*c*) Ad n. 46.
(*d*) Ad n. 50.
(*e*) Act. n. c. tom. 1. obſ. 160.
(*f*) Cit. ad n. 46.
(*g*) (*h*) Ad n. 50.
(*i*) (*k*) Ibid.

viſcera without laceration, except from the ſame tube from which it was continued, but even communicated with the cavity of the uterus, ſo that the patient had a continual dripping, from her genital parts, of a ſerum of the ſame kind with that which the ſac itſelf contain'd, in the quantity of a hundred and forty pints; the communication being alſo confirm'd by the probe, it ſeem'd probable that the tube had produc'd its parietes into the parietes of the ſac. And Camerarius the father, who had mention'd moſt of theſe alſo, hinted at a method, after ſome one of our countrymen, by which, if the return of the blood, from the ovary, is obſtructed in the ſpermatic vein, the ſerum may, by its ſeceſſion from hence, in conſequence of its creeping betwixt the two laminæ of the peritonæum, inſinuate itſelf between theſe two laminæ, according to the experiment of Lower (*l*); and thus, by disjoining them, begin to form the ſac.

But notwithſtanding I acknowledge theſe obſervations to be true; and even confeſs the cauſe, if explain'd a little more fully, and accurately, than I have done here, to be probable alſo; and ſee that it may be, likewiſe, farther transfer'd to other veins, ſometimes, that run in this ſituation; yet we either conceive, or know, that the ovaria, the tubes, and the uterus, were quite unaffected in this dropſy, according to the obſervations of Helwigius (*m*), Kniſelius (*n*), Pohlius (*o*), and Mediavia (*p*): and what relates ſtill more to the ſubject in queſtion, it is not certain that they were diſeas'd in any of the virgins who have been ſpoken of, if you except one: and even it ſufficiently appears that they were not affected in moſt of theſe patients, as all the viſcera of the belly are ſaid to have been ſound. Since theſe then were not child-bearing women, nor had any thing in the uterus, or its appendages, which could give an origin to this diſeaſe, that was peculiar to women; it is evident that it is neceſſary to add ſome other cauſes, to thoſe two which I have mention'd, that are either proper to the female ſex, or are more common among that ſex than ours.

55. But while you are inquiring after others, I will reckon up a few; as, for inſtance, the conflux of the blood, every month, into the inferior parts of the belly; their ſedentary life, which is not quite ſo proper to promote its return; the more weak reſiſtance of the female body, againſt cauſes of diſeaſe, whether external or internal; and, in conjunction with this, that moſt vile and deteſtable cuſtom of confining the belly with ſtays, eſpecially when they are hard and ſtiff; vile and deteſtable cuſtom, I ſay, becauſe no diſapprobation can be more ſevere than the extreme miſchief of them requires.

For to add, to the other inſtances of detriment caus'd by ſtays, that are taken notice of by the celebrated Winſlow (*q*), this over and above; while the lower part thereof continually, and cloſely, compreſſes whatever part of the abdomen lies betwixt the terminations of the thorax, and the upper edges of the oſſa ilia, it is eaſy to conceive, what an obſtruction is thrown in the way both of the lymph's, and the blood's motion, in thoſe veſſels alſo, which are betwixt the muſcles, and the peritonæum; eſpecially where the ſtomach and inteſtines; being diſtended with flatus, at leaſt, if not with meat

(*l*) Tract. de corde c. 2.
(*m*) (*n*) (*o*) Cit. ad n. 50.
(*p*) Supra n. 52. in fin.
(*q*) Mem. de l'acad. r. des ſc. a. 1741.

and drink; force out the abdomen from within, and preſs it againſt theſe ſtays.

But if the lymph or the ſerum be not, for this reaſon, extravaſated into that interſtice, in the manner I have mention'd *(r)*; particularly in thoſe, whoſe fluid or firm parts are diſpos'd to it more than they are in other perſons; yet it may happen to the ſame perſons, that ſome part of the retarded lymph, or blood, may form the beginnings of tumours in thoſe parts, which, being increas'd after a long time, may divide the peritonæum from the muſcles, in ſuch a manner, that the branches of the lymphatic veſſels, being pull'd away, or ruptur'd, may bring on that dropſy, which the conſtriction, and preſſure, had not, of themſelves, brought on: and the ſame branches being, at length, brought to ſuppuration, may increaſe the dropſy by purulent ichors. I perceiv'd tumours of this kind, by examining the epigaſtrium with my hand, in a matron of rank, who had been compell'd to wear ſtiff ſtays, from the time of her being quite a little girl; and thoſe ſo much the ſtiffer, and more tightly lac'd, in proportion as her relations were more afraid of her being diſtorted: theſe tumours were as yet ſmall and at a diſtance from each other; and I immediately perſuaded her to wear ſtays that were leſs ſtiff, and in a different manner.

You yourſelf might ſee, in what region of the abdomen, the ſame tumours, now grown large, had been form'd, in the two women whoſe hiſtories I laſt gave you *(s)*. Nor, indeed, were the tumours, or abſceſſes, in any other region, which Laubius *(t)* found to the number of ſix; nor the larger of thoſe four which Mothius, as is ſaid above *(u)*, found growing to the ſac. But you will not be at a loſs to conceive, how thoſe which occupied the inferior parts of the ſac, in the ſame obſervation of Mothius, or in the obſervations of Nuck (*), and Littre *(x)*, might poſſibly derive their origin from theſe ſtays; when you call to mind the lower parts of them, and the ſtiff-pointed part, which is added to the middle of them before, in a longitudinal direction: for by theſe the region of the abdomen is compreſs'd, and all the veſſels that lie there, whether lymphatic, or ſanguiferous; and particularly when the woman is in a fitting poſture.

56. As among the cauſes of this dropſy, we have admitted tumours form'd in the peritonæum, which not merely by pulling aſunder the parts, as I ſaid in purſuance of the opinion of others only, or by laying an obſtacle to the motion of the lymph, and blood, may bring on this diſeaſe; but alſo may, when they are ſuppurated, increaſe it by the addition of deprav'd ichors; we may eaſily underſtand this to be a corollary taken from thence, that, in order to explain the putrefaction, ſtench, power of eroding, and creating pains, which are often found to exiſt in the collected water, it is not always neceſſary to accuſe the long ſtagnation of that water; on account of which the ſaline, and ſulphureous, particles may be ſeparated from the others, and occaſion theſe effects. But if ſtagnation could always do this, it would certainly have done it in a great degree, after four years, after ten, after many more, as in the obſervations of Camerarius the father *(y)*, of Schröckius *(z)*,

(r) N. 54.
(s) N. 51. & 52.
(t) Cit. n. 50.
(u) N. 49.
(*) (x) Cit. n. 50.
(y) (z) Ibid.

and

and of Meekrenius (*a*): yet in theſe obſervations were none, or ſcarcely any, of theſe ſymptoms obſerv'd. And there had even been neither tumour, nor abſceſs.

However, tumours do more frequently appear, either form'd of a glandular matter, or diſpos'd in the manner of cells, bladders, or globules, as you will ſee remark'd by Acholzius (*b*), Hoechſtetter (*c*), Bogdanus, (*d*), Kniſelius (*e*), Mothius (*f*), Littre (*g*), Reſpinger (*gg*), and Mediavia (*h*); and theſe either in great number, as by the firſt four, or even, in ſome places, ſo gather'd together into a heap, that, according to the obſervation of Acholzius, "they were equal in thickneſs to the breadth of a man's hand." And Malphigi (*i*), where he, in ſome meaſure, led the way to the explication of Littre; aſſerted it to be owing to the glandular nature of the membrane of the peritonæum, that, in this diſeaſe, "notwithſtanding the dilata-"tion, it becomes more thick than is natural:" for he ſays that this is "the "property of glandular follicles, when affected by diſeaſe:" and, indeed, if you read Schröckius (*k*), Laubius (*l*), Sponius (*m*), Drelincurt, (*n*), Nuck (*o*), and Littre (*p*), you will ſee how much it has been found to be thicken'd; and ſtill more if you read Kniſelius (*q*), who, in one place, ſaw it, "of "the thickneſs of half an inch;" but ſtill much more, if you call to mind thoſe things that I related to you from Tulpius (*r*), and Bogdanus (*s*).

Therefore, if you ſhould chooſe rather to account for this increaſe in thickneſs, in the way of Malpighi, you will eaſily conceive how much the ſecretion of the included humour is increas'd, in conſequence of an increaſe in the ſecreting organs; eſpecially when you attend to the great dilatation of the veſſels, which belong thereto. For Bogdanus ſaw, very plainly, the internal epigaſtric veins, and their "extremities, to have tubercles like a filbert, as "if they had been papillæ, and even notch'd;" and Kniſelius (*t*) "the veins "very much extended, and terminating in globules." And the ſame dilatation, beſide the hiſtory of Mothius given above (*u*), is prov'd from what Palfin (*x*) aſſerts of the mammary, and hypogaſtric veins (though perhaps he meant to ſay epigaſtric) being enlarg'd to the thickneſs of the little finger. And how much the blood-veſſels, betwixt the peritonæum, and the abdominal muſcles, may dilate themſelves, nothing more clearly ſhows, than the circumſtance related by Anthony de Pozzis (*y*), of very black blood being found betwixt them, to the quantity of eighty pounds, in a plethoric and, at the ſame time, dropſical virgin.

57. Theſe fountains, or origins of the fluid, being thus added, and explain'd, there will be leſs reaſon to wonder at the vaſt quantity of water, which has been found, by many perſons, in a dropſy of the peritonæum: the greateſt quantity of which I do not mention here, as I am afraid of being led into ſome error, by the meaſures being different among different nations.

(*a*) N. 49.
(*b*) (*c*) N. 47.
(*d*) N. 49.
(*e*) N. 50.
(*f*) N. 49.
(*g*) (*gg*) N. 50.
(*h*) N. 51. 52.
(*i*) Reſp. ad epiſt. de recent. medic. ſt.
(*k*) (*l*) (*m*) (*n*) (*o*) (*p*) (*q*) Cit. ad n. 50
(*r*) (*s*) Ad n. 49.
(*t*) Ad n. 50.
(*u*) Ad n. 49.
(*x*) Ad. n. 50.
(*y*) Eph. n. c. dec. 1. a. 4. obſ. 41.

But

But the diſpoſitions of the ſecerning organs, in conſequence of their being preternaturally affected, join'd with the various conſtitution of the blood, will diminiſh our admiration, when we read that a different kind of humour, or fluid, was found in different caſes, inſtead of a limpid, or fluid ſerum; ſo that even in ſome, as by Gahrliepius (*z*), and Camerarius the ſon (*a*), it was found to be like jelly, or gluten: or if in ſome it has been found leſs deprav'd, yet in others, humours of the moſt vitiated kind have been found, and ichor proper to produce ulcerations, or even to conſume the very parts themſelves; if, however, in the woman ſpoken of by Acholzius (*b*), the muſcles of the abdomen were really almoſt annihilated, and not rather chang'd into any other form, or extenuated by their emaciated ſtate, as in the caſe given by Nuck (*c*); or even by too great diſtention, as in the relation of Gahrliepius (*d*), and, as it in part ſeems to have been, in the obſervation of Littre (*e*).

58. To theſe things that I have curſorily hinted, in regard to the cauſes, and nature, of this diſeaſe, it will not be improper to add ſomething in regard to the ſigns. You will know it from the aſcites by theſe marks: firſt, becauſe it increaſes, for the moſt part, more ſlowly than that, and particularly in the beginning, as almoſt all the examples ſhow; among which I know not why ſome have here had an eye to the obſervation of Blaſius (*f*), wherein not a word is ſaid of the time: and I ſaid, for the moſt part, that I may not ſeem to you to be in an error, if you ſhould ſuppoſe that the hiſtories of Nuck (*g*) and Chomel (*h*) belong to this claſs; the firſt of whom ſaw the tumour of the belly increas'd to a very great ſize, "in the ſpace of a month," and the latter even in a much ſhorter time.

In the ſecond place, the face, in the diſeaſe I am treating of, continues to have its natural colour; as the obſervations of Drelincurt (*i*), and Littre (*k*), teach us, and one of Chomel's (*l*) ſeems to hint: and, indeed, Nuck (*m*) firſt expreſly advanc'd this, as one of the ſigns; although I ſee that a virgin had been formerly deſcrib'd by Dodonæus (*n*), who, through the whole time that ſhe was troubled with a tumour of the abdomen, "had a continually "elegant and lively colour of her face, juſt as in health;" yet the tumour was from urine, which the bladder, being pierc'd through with ulcers, had pour'd out into the cavity of the belly.

In the third place, the ſtrength, and action of the body, agree with the complexion, as is teſtified by the ſame Nuck, and prov'd by examples; not only thoſe three which I juſt now ſpoke of, but alſo by many others, and, in particular, by that of Meekrenius (*o*), who remark'd an almoſt incredible agility with that weight, and even utero-geſtation, and regular child-birth; which are related by Laubius (*p*), ſo that the infant liv'd: and the woman ſpoken of by Scultetus (*q*), bore a child three times, and "always with a pro-"per evacuation."

(*z*) Cit. ad. n. 50.
(*a*) Ad n. 54.
(*b*) Ad n. 47.
(*c*) (*d*) (*e*) Ad n. 50.
(*f*) Ad. n. 49.
(*g*) (*h*) Ad n. 50.
(*i*) (*k*) (*l*) (*m*) Ibid.
(*n*) Medicinal. obſ. c. 34.
(*o*) Cit. ad n. 49.
(*p*) (*q*) Cit. ad n. 50.

The

The obſervation of the menſtrual evacuations being duly preſerv'd was ſtill more frequent, as in thoſe three authors whom I quoted in the firſt place, in regard to colour: to whom you may add Camerarius the father (*r*), and Schrockius (*s*); but others have either fallen into this dropſy, after that purgation has ceas'd from age, or, which is more frequent, after its being ſuppreſs'd, or not properly regulated: ſo that married women have thought themſelves pregnant, and virgins have had their reputation ſuſpected. As to thirſt, and the quantity of urine diſcharg'd, although I read of the woman deſcrib'd by Nuck (*t*), "that notwithſtanding ſhe was troubled with a "thirſt, and drank a great quantity of liquids, for the moſt part, ſhe made "nevertheleſs but little water;" yet in others, I either obſerve nothing at all to be ſaid about it, or it is ſaid, in general, that the patient had liv'd pretty comfortably, or, at leaſt, without any particular uneaſineſs, that great load of belly excepted; or it is even expreſsly ſaid, "that the urine had con-"tinu'd unchang'd at the time of its diſcharge, in its conſiſtence, colour, and "ſediment," as by Drelincurt (*u*); and in the ſecond obſervation of Chomel, that the matron had no thirſt, and diſcharg'd her urine naturally as uſual: and I ſee, beſides, that in the woman ſpoken of by Nuck, the urine was "ſomewhat pale," and not ſaturated, as it is in thoſe who have an aſcites; but that a ſmall quantity of this diſcharge, and a thirſt, have been remark'd in the diſeaſe, after having made a conſiderable progreſs, and being complicated with other diſorders, particularly with calculi of the kidnies.

For when the diſeaſe has continu'd a long time; and it may be carried on to a very great length, even to the ſpace of many years (which is a circumſtance, of itſelf, ſufficient to diſtinguiſh this diſorder from the aſcites) and not only to the ſpace of four years, as Littre (*x*), and others, to ſix or ſeven as Laubius (*y*), to eight as Bogdanus (*z*) and Kniſelius (*a*), to nine as Sculte-tus (*b*), to ten as Nuck (*c*), and others, have ſeen it; but it is even certain, as is ſhown above (*d*), that it may be born for more years than theſe: when the diſeaſe, therefore, has continu'd a long time, it is not to be expected that the greater part of the good ſymptoms ſhould remain. But it is ſufficient that there have been moſt of theſe good ſigns, in order to diſtinguiſh the one from the other: which is alſo true of the other ſymptoms that I am going to add.

For, in the fourth place, there was no ſwelling of the feet, except in the caſe of Gahrliepius (*e*), in the beginning of the diſeaſe; none, except near the cloſe of it, and not even then in all: no waſting of the other parts, and of the body in general; no difficulty of breathing; no ſlight fever; no pain. Yet when the diſeaſe is far advanc'd, all theſe ſymptoms are, for the moſt part, accuſtom'd to come on; and eſpecially if with the water there are internal tumours, which come to ſuppuration, and the ſac becomes ulcerated: although we have the deſcription of an highly emaciated ſtate of body coming on, even without theſe ſuppurations, from Drelincurt (*f*); and of a conti-

(*r*) (*s*) (*t*) (*u*) Ad n. 50.
(*x*) (*y*) Ibid.
(*z*) Ad n. 49.
(*a*) (*b*) (*c*) Ad n. 50.
(*d*) N. 56.
(*e*) Cit. ad n. 50.
(*f*) Ad n. 49.

nual,

nual, and intolerable pain, particularly in the night-time, from Acholzius *(g)*.

In the fifth place, medicines are of no advantage: and whether you ſtrive to increaſe the diſcharges by the bladder, or inteſtines, the tumour of the belly is not diminiſh'd; but the ſtrength of the patient is rather diminiſh'd, eſpecially if any violent remedy be made uſe of; and her miſeries are encreas'd: ſo that I do not remember to have read an inſtance of any one, who has been in the leaſt reliev'd, for any ſhort time, in this dropſy (which is a circumſtance that happens frequently in an aſcites) not to ſay that has ever been perfectly cur'd.

59. But although theſe ſigns may be of uſe to diſtinguiſh thoſe dropſies one from the other, yet I do not know of how much advantage they may be in diſtinguiſhing this of which I am treating, from another peculiar kind of dropſy. For I have obſerv'd that the ſame Nuck, when he propoſes the greater part of the ſigns which I have enumerated; ſo that if they are ſtill good, the water may be drawn off from the peritonæum; does not ſeem very well to have remember'd what he had aſſerted in the chapter preceding *(h)*. I, ſays he, "have learn'd, by experience, that thoſe women whoſe face is of "an agreeable roſy colour, who have a pretty good appetite for food, drink, "go to ſtool, and make water without any conſiderable uneaſineſs, whoſe "bodies are not much affected by purgatives, by diuretics, nor by diaphoretics; I have learn'd, I ſay, that theſe women generally labour under a "dropſical diſorder of the uterus, the Falloppian tubes, or the ovaries; and "that the lymph which is included in a peculiar ſac, can be carried off by no "art:" by which he underſtands ſurgery as well as medicine. And as to the other ſigns which he has not touch'd upon, you eaſily ſee, by the light of reaſon itſelf, that theſe, alſo, may be common to the dropſy of theſe parts, and of the peritonæum.

Let us ſee, therefore, what the remaining ſigns of the dropſy of the peritonæum are. For they are thoſe which are taken from the inſpection of the abdomen, and the examination thereof with the hand. And that certainly would have been the moſt eaſy, and natural, which I remember to read propos'd by a certain very famous man; I mean, that in this dropſy there is always the ſmalleſt prominence about the navel: becauſe in that part the peritonæum cannot be ſeparated from the tendons of the muſcles. But the caſe ſeems to have been quite different, as it appear'd to Hoechſtetter *(i)*, to Drelincurt *(k)*, and to Nuck *(l)*, the firſt of whom ſaw the navel, in this diſeaſe, "expanded, and altogether dilated;" the ſecond "projecting;" the third "prominent," to ſuch a degree, as conſiderably to exceed the ſize of a "fiſt." And what will you ſay to this, that a countrywoman deſcrib'd by the celebrated Brehmius *(m)*, had not only her navel prominent to the ſize of a gooſe's egg; but even that the tumour, being ſpontaneouſly ruptur'd, always pour'd out, on every other day, ſuch a quantity of limpid and inodo-

(g) Ad n. 47.
(h) 8. Adenogr.
(i) Cit. ad. n. 47.
(k)
(l) Ad n. 50.
(m) Act. n. c. tom. 8. obſ. 79.

rous

rous ſerum, that the large tumour of the belly being entirely got rid of, the patient recover'd.

But, as it only ſeems " moſt probable" to the author, that this was a dropſy of the peritonæum, it is proper that I produce a more certain example, and one that is confirm'd by anatomy, as I generally do, and that from the celebrated Anhornius (*n*). A young man, who was the more readily ſuppos'd to be troubled with an aſcites, becauſe he had, more than once before, labour'd under an anaſarca, having his navel grown out to the bigneſs of a fiſt, and in conſequence thereof, ſpontaneouſly ruptur'd, had a great quantity of ſerum diſcharg'd from the fiſſure, ſo that health ſeem'd to be reſtor'd; but after two months, the navel ſtarted out again, with a freſh-collected fluid, which was a ſecond time diſcharg'd: finally, a third time the tumour, which had twice vaniſh'd, diſtended the abdomen; but as he was now become tabid, the fluid, which was again diſcharg'd in the ſame manner, was of no effect in preventing the fatal period of the diſeaſe.

By diſſection, no ſerum was diſcover'd in the cavity of the belly, but whatever of this fluid remain'd was found " betwixt the duplicature of the peri- " tonæum;" where the fountains, or origins of it, that is to ſay, " many lym- " phatic tubuli, or little glandular knots, which, when preſs'd, wept a limpid " water," were alſo found. And theſe things I have related the more at large for this reaſon, becauſe this is the only example of the dropſy of the peritonæum, which I have hitherto been able to meet with in the male ſex. For as to your being, perhaps, ready to ſuppoſe, on reading the caſe of a great man (*o*), whoſe belly ſwell'd in the decline of a fever, which had been join'd with a grievous colic, and decreas'd in its ſize, by reaſon of the navel, which had been a long-time prominent, being ſpontaneouſly ruptur'd, and pouring out " thirty pints and more of true and very fœtid pus," and afterwards a conſiderable quantity alſo; a fiſtula of the navel remaining behind, with two ſcirrhous glands, as it were, at the ſide thereof; as to your being ready to ſuſpect then, that this caſe ought to be referr'd to the claſs of dropſies of the peritonæum, I would have you firſt conſider, how different from your ſuſpicion, was the opinion of the phyſician who was far the moſt ſkilful, although he propos'd the matter by way of *probiem*; and in the ſecond place, that although the morbid matter was tranſlated into the ſame ſituation, wherein that dropſy is generated, or, if you pleaſe, collected there, yet that this was not ſerum by any means, but real and true pus.

And I have not preſum'd even to enumerate the ſingular obſervation of Gabbriellius (*p*) on a woman, among the examples of dropſies of the peritonæum, notwithſtanding he found that the almoſt incredible quantity of water, had not been in the cavity of the belly, but " betwixt the peritonæum " and the muſcles." For that water did not ſeem to me to have been ſecreted there, which could be carried off in the ſpace of three days, by the uſe of ſome hydragogue medicines, in ſo great a quantity, that the vaſt tumour of the belly quite ſubſided, which I have ſaid above (*q*) does not happen in this ſpecies of dropſy. And indeed as this woman had her dropſy come on after

(*n*) Eph. n. c. cent. 9. obſ. 100. n. 2.
(*o*) Commerc. litter. a. 1735. hebd. 37. n. 2.
(*p*) Eph. n. c. dec. 3. a. 5 & 6. obſ. 279.
(*q*) N. 58. in fin.

an inflammation of the ſpleen, that viſcus was found to be the only one which was diſeas'd; "ſome ulcerous ſinuſſes" therein, by means of membranes that lay between, "conſtituting a kind of ſmall canal; whereby a ſeroſity "was tranſmitted from the ſpleen, betwixt the peritonæum, and the muſcles "of the abdomen."

But, to return to the ſign taken from the navel, and the part which lies neareſt to it round about, ſubſiding; I ſhould, rather, in conjunction with Reſpingerus (*r*), whom I have already quoted, and whoſe obſervation, alſo, is an argument againſt this ſign; I ſhould rather, I ſay, believe, that ſome particular caſes had been conſider'd, in which either the diſorder was not yet far advanc'd, or, at leaſt, wherein there was but a ſmall quantity of water. From whence you may gather, that if thoſe objections, which were juſt now made to this ſign, could not be of any force, yet that it would be of no advantage, when the dropſy of the peritonæum did not extend itſelf to the region of the navel; and, in like manner, of no uſe at that time, in order to diſtinguiſh thoſe other included dropſies (as they are by no means ſeated betwixt the muſcles, and the peritonæum) from this of which I am ſpeaking. And I fear the ſame thing of other ſigns of the ſame diſeaſe, which are propos'd by men, in other reſpects, very learned. They are theſe.

If the belly preſerves nearly the ſame figure, although the ſituation of the body be chang'd. If the tumour has any peculiar circumſcription. If there be any place of the belly, wherein if it be ſtruck on one ſide, no ſtroke, no fluctuation are perceiv'd on the oppoſite ſide. But to begin with the laſt, and to take no notice that Nuck (*s*) has plac'd among the ſigns, or, at leaſt, among the good ſigns of this diſeaſe, "if the patient feels ſcarcely any fluctu-"ation." Hoechſtetter (*t*) has remark'd of his patient, in the latter part of his Scholium, that the great tumour of the belly, when ſtricken with the hand, gave forth a ſound like a drum; but that "a fluctuation of water" had been "never" perceiv'd: and Camerarius the father (*u*) has ſaid, that not even in the body of a woman after death, that is when we are at liberty to handle the belly more freely, and to ſtrike it with more force, did it ſeem to contain any thing fluid, rather than ſolid; or, in other words, "no fluctua-"tion was perceiv'd." This third ſign, therefore, will be of no advantage, except where we can obſerve a fluctuation. And the ſecond, which is taken from the peculiar circumſcription of the tumour, will not be of any advantage, when this dropſy ſhall diſtend the whole abdomen to ſuch a degree, that "the belly is pretty equally tumid, as the ſame Camerarius obſerves; or as Drelincurt ſaw (*x*) it, "equal, not acuminated, or tending to a point, in "any part, or protuberating here and there with little riſings."

But, when the tumour ſhall appear to be bounded within a certain region, it will not, for that reaſon, be altogether plain, whether this tumour is from a dropſy; or, if from a dropſy, whether from a dropſy of the peritonæum, or of thoſe parts, of which Nuck ſaid it was, when the tumour occupied the

(*r*) (*s*) Cit. ad n. 50.
(*t*) Ad n. 47.
(*u*) (*x*) Ad n. 50.

lower

lower region of the belly: although how high, and to how great a breadth, the dropſy of one tube may extend itſelf ſometimes, that obſervation of Munnickius, which is publiſh'd in the *Bibliotheca Anatomica* (*y*), ſufficiently ſhows.

Laſt of all, in regard to that firſt ſign, it will be, perhaps, of uſe, when the water confin'd in the peritonæum, ſhall be as yet in very ſmall quantity. But when it has increas'd to ſuch a degree, that the belly, as you ſee in the plate of Meekrenius (*z*), hangs down to the middle of the thighs, or almoſt to the knees, as Helwigius (*a*) deſcribes it; and even, on one hand, covers the whole breaſt, and, on the other, the legs, as Palfin repreſents (*b*); it is then certainly not to be ſuppos'd, that the figure of the belly is not chang'd, if the ſituation of the body is chang'd. And as to the other ſigns which are added, and are to be collected, after the water is drawn off by the ſurgeon, by the probe, by examining the parts with the hand, and by injection; beſides their being too late, they are alſo of ſuch a nature, that they may indeed ſerve to diſtinguiſh this diſeaſe from the aſcites, but not from thoſe other kinds of dropſy.

60. Be cautious, however, of ſuppoſing that theſe ſigns, which I have hitherto examin'd, are diſapprov'd by me. For I have only excepted the caſes in which moſt of them may be of no effect. But it can ſcarcely happen, that all of them are uſeleſs in moſt caſes; eſpecially if we attend cloſely to the firſt beginnings of the diſeaſe, and accurately conſider what was the face of affairs at that time: as, for inſtance, if the tumour ſhall begin from the epigaſtrium; or if from the hypogaſtrium, ſhall nevertheleſs be immoveable while the woman lies down, and turns herſelf from one ſide to the other, nor ſhall give any ſenſe of internal weight at the pubes, when ſhe ſtands upright, nor cauſe any difficulty in making water: although when the diſeaſe is advanc'd, there may be marks, from whence we may judge certain parts, ſay the uterus, for inſtance, not to be affected; that is to ſay, if the menſes continue to be properly diſcharg'd, we may conjecture that this viſcus, the tubes, and the ovaria, are not oppreſs'd with a dropſical, or other kind of tumour: or if the woman feel none of thoſe ſymptoms which I mention'd juſt now. In fine, the intention, and ingenuity, of thoſe perſons who firſt deliver'd, down to us, the ſigns of diſeaſes, are highly to be commended. Yet, at the ſame time, it is our buſineſs to compare together, a greater number of hiſtories, both of diſeaſes, and diſſections, than they had it in their power to compare; that from thence we may learn which of theſe ſigns may be us'd the moſt ſafely, and when: and, on the contrary, which is leſs to be depended upon, and apt to lead us into error.

61. Thus even in the cure of this dropſy, that is, the dropſy of the peritonæum; in order to ſay ſomething on this head, alſo, as I have promis'd; what could be done by Tulpius (*c*), and Meekrenius (*d*), better than to extol the paracenteſis alone, which had been recommended by Walæus and Coſterus, in a living woman, againſt the dropſy of the peritonæum; after having

(*y*) Tom. 1. in adnot. ad Graaf. de mulier. organ. ubi de oviduct.
(*z*) Cit. ad n. 49.
(*a*) (*b*) Ad n. 50.
(*c*) (*d*) Cit. ad n. 49.

examin'd the nature and ſeat of this diſorder, by diſſection. For without doubt, on one hand, they ſaw that other remedies were of no effect; and, on the other, that this operation might be perform'd with the greateſt expedition and ſafety, as the viſcera were entirely ſeparated from the water; and, for that reaſon, ſound: from whence there is no doubt but the long preſervation of the vigour of the body, together with its capacity for action, is to be accounted for, as I have ſaid already (*e*).

Other phyſicians, and ſurgeons, influenc'd by the ſame kind of reaſoning, came into this opinion; Nuck (*f*), in particular, not doubting, but the ruptur'd lymphæducts may be clos'd again, in conſequence of their being compreſs'd, betwixt the muſcles of the abdomen, which contract themſelves, and the laminæ of the peritonæum; which in an aſcites, that has its origin from the rupture of lymphatic veſſels, can by no means take place; and producing two cures of the dropſy of the peritonæum, which were brought about in this way, one of Amicus, and the other, which he ſuppos'd to belong to this claſs, from Thomas Bartholin: to which he would, moreover, have added others, if they had then exiſted; as that which the celebrated Degnerus (*g*) has given the hiſtory of, where the diſorder was in the lower part of the abdomen, on the right ſide: and ſtill more, that which Brehmius, whom I have already commended (*h*), relates; when the dropſy was in the whole abdomen, and which nature herſelf perform'd, by a great diſcharge of clear water in the former caſe; and, in the latter, by a great diſcharge of limpid, and inodorous ſerum.

But after it was obſerv'd, that the peritonæal ſac was not always ſo diſpos'd, as it was ſeen to be by Tulpius, and Meekrenius, but was, ſometimes, ſo affected with tumours, abſceſſes, and ulcers, that though the water might indeed be drawn off, the ſources of this fluid, nevertheleſs, and the pus, could not be ſo eaſily dried up; and that, for this reaſon, a matron of whom Littre (*i*), and a woman of whom Laubius ſpeaks (*k*), could not be ſav'd, although the former had the water drawn off thirteen times within two years, and the latter ſixteen times within ten months; ſo that the whole quantity of fluid, diſcharg'd by this laſt woman, amounted to more than ſeven hundred and twenty pints: then this method of cure did not ſeem to be, always, ſo expeditious, and ſecure, as it had at firſt ſeem'd; nor was it without reaſon, and juſtice, that they chang'd their opinion. And that this will appear the more reaſonable to you, I do not doubt, as there are ſo many of the obſervations I have produc'd above; and thoſe even from former times, wherein theſe diſorders of the peritonæum were not wanting.

Therefore, beſides thoſe women, whoſe ſtrength is already broken down, who were the only ſubjects excepted by Tulpius, and thoſe whom Nuck had excluded afterwards, for various reaſons, indeed, but all referable to the ſame head nearly; Littre has moreover prudently added others, admoniſhing us with how much danger of an unſucceſsful event, we undertake the cure of thoſe women, in whom not only the diſeaſe is very inveterate, and very much

(*e*) N. 58.
(*f*) Cit. ad n. 50.
(*g*) Act. n. c. tom. 5. obſ. 2.
(*h*) Vid. ſupra. n. 59.
(*i*) (*k*) Cit. ad. n. 50.

extended,

extended, but thoſe alſo in whom the water which is drawn off is thick, of a bad ſmell, and a deprav'd colour; and in whom any tumour, or hardneſs, that is when the water is evacuated, is perceiv'd in any part of the peritonæal ſac. And this ſign was afterwards manifeſt in the woman of Laubius, and another alſo, which ought to be added here; I mean that the right ſide being prick'd, nothing but pus was diſcharg'd, while from the other, which was prick'd at the ſame time, water flow'd out. However, theſe two laſt mention'd ſigns relate to fore-knowing the event of the caſe, when the cure has been already undertaken, and not to the propriety of attempting it.

62. But before you even undertake to attempt a cure, I would have you enquire, accurately, whether there was any hardneſs, or tumour, before, which the great diſtention of the abdomen now hides; and beſides, whether the patient is troubled with any conſiderable pain (I do not mean that which the diſtention itſelf produces, but that which ariſes from an ulcerous eroſion of the teſtis) or, at leaſt, whether pain is excited in any part of the abdomen, when you preſs it pretty cloſely with your fingers. It does not, however, eſcape me, how happily every thing ſucceeded with Chomel (*l*), even in a great ſuppuration, and a certain eroſion; but both of them recent: nor what Littre (*m*) propoſes againſt theſe ulcers, firſt by injections, and after that by ſkilful compreſſions, and bandages; and even againſt tumours, by cutting into them from above, and applying certain methods of cure. I know, alſo, that the water was drawn off by Laubius (*n*), not with a view of curing, but of eaſing the patient, where there were purulent tumours.

But I am not ſpeaking, here, of proſecuting cures which are begun by nature, or by art, but of attempting them at large; and without a proper hope of bringing them to perfection. You, therefore, will avoid thoſe patients, alſo, which I juſt now added, when it is in your power. Yet there are, beſides, thoſe in whom the tumours are not altogether hid by the diſtention of the abdomen; either becauſe there is as yet a leſs quantity of water, as in the ſecond of the obſervations that I have produc'd (*o*); or even becauſe the water, or any other matter of a thicker nature, is not contain'd in one continu'd ſac, but is divided into many cavities; ſo that ſome are more turgid, and others leſs ſo: ſuch as were found in the diſſection of a midwife after death, by Camerarius the younger (*p*), who very prudently objected to performing the operation of paracenteſis, which had been recommended by another; becauſe he had obſerv'd "the bulk of the abdominal tumour to be unequal, and to "give a different degree of reſiſtance in different regions." And what could the parancenteſis have done in this caſe, or even in that which Gahrliepius (*q*) had deſcrib'd?

For the matter, whether ſimilar to gluten, or to the ſpawn of frogs, does not evacuate itſelf by the infliction of a pretty large wound; not to ſay by the uſual foramen: and if it be thin, even very thin, where it is ſeparated by many partitions, as it was in both of thoſe obſervations, although it ſhould be diſcharg'd from one cavity, which you have perforated, it does not, for that reaſon, come out of the others; and therefore the ſame thing muſt of

(*l*) (*m*) (*n*) Ad n. 50.
(*o*) N. 52.
(*p*) Act. n. c. tom. 1. obſ. 160.
(*q*) Cit. ad n. 50.

courſe happen here, that I ſaid happens in an aſcites (*r*), when that is made up of hydatids, which are, alſo, connected with each other. And as I ſee that this caſe is reckon'd among the various kinds of aſcites, I was not willing to paſs over this "encyſted dropſy," as it is call'd by obſervators, on the preſent occaſion. For although it differs in its matter, and in its partitions, from the more frequent dropſy of the peritonæum, yet it is generated in this membrane: nor ought we to omit the mention of it, becauſe it is only a rare caſe, but rather take particular notice of it, for that reaſon; leſt when it is at any time met with, it ſhould be again improperly confounded with the aſcites, or with the other more known dropſy of the peritonæum.

63. And indeed I cannot help thinking it very proper to take notice of other dropſies, that are encyſted in like manner, before I make an end of writing. There are ſome thus call'd by thoſe who give the hiſtories of them, which, nevertheleſs, belong to the more frequent dropſy of the peritonæum; as that on which the celebrated Schefflerus (*s*) publiſh'd a diſſertation, in which he is of the ſame opinion with me (*t*); I mean that a great quantity of ſerum had been collected "within the duplicature of the peritonæum," and had, by this means, form'd a ſac, upon which a large ſteatoma was generated. But others are of a different kind, as that deſcrib'd by the celebrated Anhornius (*u*); an almoſt incredible quantity of fluid being confin'd betwixt the peritonæum, and the omentum, which was become very hard, in a woman whoſe "face, conſidering her emaciated ſtate of body, was of a pretty good colour, "and whoſe feet free from ſwelling:" which kind of ſigns, and others likewiſe, I ſhall not omit to mention from time to time, that you may compare them with my former doubts and heſitations (*x*).

So, alſo, the younger du Verney (*y*) relates, that a woman, of thirty years of age; who had begun to have a tumour in her belly ſeven years before, was of a good complexion, had a good appetite, and ſlept well, and was as yet very ready and alert in her actions; had, on opening the abdomen after death, a large ſac therein containing many cells, not at all communicating one with the other, each of which was filled with a peculiar matter, quite different from the reſt: which agrees very well with his account, that a ſerum of a different nature had been drawn off at different times. And the ſame author diſſected a woman with an aſcites, in whoſe belly he found, beſides, a large cyſt full of rediſh ſerum. There are alſo encyſted dropſies, in regard to which it does not well appear, from the anatomical deſcription, whether they belong to the firſt or ſecond claſs; as you will eaſily believe, from reading what is written of the ſac, which was ſeen in a certain virgin (*z*), who had been taken off by a very ſudden death, after the diſcharge of the water.

64. And although I ſhall write ſome things, in the next letter upon the dropſy of the ovaria, yet, as this, alſo, is enumerated among the encyſted dropſies, I will rather here hint at ſuch remarks, as you may readily join

(*r*) N. 45.
(*s*) Hiſt. hydr. ſaccat.
(*t*) §. 4.
(*u*) Eph. n. c. cent. 9. obſ. 100. n. 7.
(*x*) N. 57.
(*y*) Mem. de l'acad. r. des ſc. a. 1703.
(*z*) Eph. n. c. cent. 7. obſ. 17.

with

with thoſe which I had occaſion to make before (*a*), upon the ſame diſeaſe: leſt in the next letter I ſhould be more prolix, or leſs clear, than is neceſſary.

Some obſervations of this diſorder, likewiſe, are certain, and others doubtful. I will produce examples of each kind, which you may add to the Sepulchretum. Among the certain obſervations of this diſorder, either in its beginning, or when it had made but little progreſs, are thoſe made by Camerarius the ſon (*b*), by Goetzius (*c*), by Maggi and Dodi (*d*). The firſt of theſe gentlemen found a humour in the ovarium, to the quantity of four ounces; the ſecond to the quantity of three pints; and the two laſt to the quantity of three pints and a half: and the ſame obſervers (for the two firſt had heard nothing of the ſigns relating to the diſorder that they could remark) found out, by inquiry, that the woman had often complain'd of a weight, which ſhe perceiv'd in the lower part of her belly, in ſuch a manner, that on whichever ſide ſhe lay, on that ſide the weight lay; and when ſhe turn'd herſelf to the oppoſite ſide, the weight was transfer'd thither likewiſe.

But thoſe of whom Riedlinus (*e*), Vacher (*f*), and Schacherus (*g*), have written, after that in each of them the ovarium, and the belly, had already grown out into a ſurprizing tumour, gave theſe relations nevertheleſs; the firſt of them, that her belly had begun to ſwell on the left ſide; at which time ſhe had conceiv'd, notwithſtanding this affection, and was happily deliver'd, being alert, ſprightly, and robuſt, even in the latter part of her diſeaſe; inaſmuch as, except the tumour of her belly, which was troubleſome to her, ſhe had nothing that gave her the leaſt uneaſineſs: the ſecond, that ſix or ſeven years before, ſhe had firſt of all felt a pain in the hypogaſtrium, on the left ſide: the third, that ſome years before, a pain in the belly, which ſhe did not know how to explain, had been the beginning of her evils; that after this, a tumour being form'd by degrees, the weight of it was us'd to fall on that ſide, to which the ſituation of the body inclin'd it.

Theſe two, as well as the firſt, had found no advantage, or alleviation, from medicines of any kind whatever: but they had not, like the firſt, ſuffer'd very little inconvenience, particularly in the latter part of the diſeaſe, when they were unable to reſt in their beds, except they ſupported themſelves on their bended knees, and, inclining their bodies forwards, laid their heads upon the bed that was under them: which kind of poſture was obſerv'd by Scheffierus (*h*), to be neceſſary, in ſome meaſure, to the woman he ſpoke of, in order to incline her to ſleep: but this woman labour'd under a dropſy of the peritonæum; and the three, of whom I am at preſent ſpeaking, under a dropſy of the left ovarium; which being ruptur'd, here and there, in the third woman, had join'd an aſcites to itſelf over and above, juſt as it happen'd in that widow who is deſcrib'd by the celebrated Baſſius (*i*), and in another woman, who is ſpoken of by the celebrated Guttermann (*k*).

(*a*) N. 58. 59.
(*b*) In obſ. 160. cit. ſupra ad n. 62.
(*c*) Act. n. c. tom. 2. obſ. 207.
(*d*) Apud Valliſner. iſtor. della generaz. p. 3. c. 5. & tab. 12.
(*e*) Eph. n. c. cent. 7. obſ. 56.
(*f*) Hiſt. de l'acad. r. des ſc. a. 1739. obſ. anat. 3.
(*g*) Diſſ. de virgine aſcitica §. 10. 13. & cæt.
(*h*) Cit. n. 63.
(*i*) Dec. 4. obſ. anat. 8.
(*k*) Act. n. c. tom. 3. obſ. 105.

Others

Others have been more happy under this tumour of the ovarium, though increas'd to the higheſt degree; as the virgin of whom Gullmann (*l*) relates that ſhe had, nevertheleſs, for fifteen years, "enjoy'd perfect health; for her "menſes were regular; "ſhe had a good appetite, ſlept well, &c;" except that, in the two laſt years, ſhe was frequently ſeiz'd with ſwoonings: and, in like manner, as two women who were diſſected by Jo. David Mauchartus (*m*). In what ſtate theſe patients were, for more than ſeven years, during which time, if you except almoſt the laſt weeks, they were never under a neceſſity of confining themſelves to their beds, you may conjecture from the words which he premiſes to the obſervation: thoſe dropſical women who "are neither pale, but rather preſerve a roſy colour in their cheeks, nor have "a tumour of the feet, ſo that they rather grow lean, and ſlender, in their "limbs, and the other part of their body, notwithſtanding the abdomen is "increas'd every day; theſe women, I ſay, if they carry this load about "them for a long time, without any conſiderable injury to the actions of "the body; if they have a good appetite, are not very thirſty, nor have a "cough, but the inteſtines perform their office properly, the urine is of a na-"tural colour, and the tumour of the abdomen neither gives way to purging "nor diuretic medicines; and eſpecially if the diſorder takes its origin from "a difficult birth, or an unfortunate time of child-bearing, from a falſe con-"ception, or abortion, without other concurring ſigns of a cachexy; are "always affected with a dropſy of the ovarium, or that which is call'd an "encyſted dropſy."

But theſe words of this very eminent man, if we underſtand them ſo as to ſuppoſe them referable to no other dropſy but that of the ovarium, are contradictory, you ſee, to thoſe things which are ſhown above (*n*), in regard to ſome other patients, and will be ſhown below. Moreover, as to the ſigns of that dropſy, the celebrated Trew (*o*), when he propoſes his obſervation thereof, ſays there were, among thoſe that examin'd the abdomen of a living woman, ſome who "pronounc'd that there was an encyſted dropſy;" and others who, "becauſe no fluctuation could evidently be perceiv'd, upon "ſtriking the belly, call'd it into queſtion:" and then enquires, "whether "when the abdomen is expanded into a preternatural bulk, is, at the ſame "time, ponderous and heavy, but a fluctuation cannot be very accurately "perceiv'd, by a percuſſion of the belly;" he inquires, I ſay, "whether "we may reaſonably conclude from thence, that the diſeaſe ought to be "call'd a dropſy of the ovarium, rather than an aſcites?" The celebrated Targioni (*p*) however; who ſaw a very great dropſy of the ovarium, if any other man did, and has written accurately, and learnedly, upon this diſeaſe; when he gives the hiſtory of a matron, who was afflicted with this diſorder four and thirty years, from the beginning to the end, being troubled with an exceſſive diſcharge of the menſtrua, as long as her time of life permitted; and, finally, with frequent vomitings, and ſome difficulty of breathing, in going up ſtairs, and being extenuated in the upper part of her body, but

(*l*) Eorund. t. 2. obſ. 80.
(*m*) Eph. n. c. cent. 8. obſ. 14.
(*n*) N. 58. 59.
(*o*) Comerc. litter. a. 1734. hebd. 44.
(*p*) Prima raccolt. d'oſſerv. med.

having

having a good appetite, and being able to ſtand, even to the very laſt week of her life, and to move herſelf as ſhe pleas'd; and, what is ſtill more ſurprizing, to lie down on either ſide, or in a ſupine poſture, and with her head low, without any inconvenience; relates that the ſame woman, both while ſhe was living, and after death, was known to have her belly full of water by the touch: as a fluctuation was very evidently perceiv'd, even by ſtriking it gently with one hand, while the other was applied to the oppoſite ſide, juſt as it happens in patients who have an aſcites.

Nevertheleſs, the ſac fill'd the whole cavity of the belly: and the water, which was computed to be in the quantity of about a hundred and fifty pints, fill'd the whole cavity of the ſac to ſuch a degree, that upon making the ſlighteſt puncture into it with the knife, the fluid burſt forth with the greateſt impetus. Is this difference to be accounted for from hence, that in the woman ſpoken of by Trew, the water was divided into many cells; but, in the matron ſpoken of by Targioni, was contain'd in one cavity, ſo that nothing prevented the fluctuation being communicated? I ſhould perhaps have made this concluſion, and not without ſome advantage in the cure of the diſorder, as will be ſhown hereafter (*q*), if Camerarius the father, when he could perceive no fluctuation, as is ſaid above (*r*), had made any mention of cells being found in his large ſac. You will inquire more accurately into theſe things, not only in the writings of the authors whom I have mention'd by name, but alſo in the writings of thoſe whom I have without doubt omitted (*s*); among whom the celebrated Benevolus (*t*) ought to have been particularly conſulted by you, if he could have deſcrib'd the other circumſtances, with the ſame accuracy, wherewith he deſcrib'd that large ſac, into which the ovarium had expanded itſelf.

65. Hitherto I have taken notice of thoſe obſervations, which are, beyond a doubt, to be refer'd to the dropſy of the ovarium. I will now ſubjoin ſome, according to my promiſe, in regard to which you may be in doubt, whether to claſs them with the others. You will read two of the celebrated Jo. Mart. Brehmius (*u*), in the firſt of which a great ſac, full of water, that the patient had been troubled with for fourteen years, was "very cloſely "connected" to the urinary bladder; and in the ſecond a ſac of the ſame kind which had troubled the woman for two years "was grown into one ſub-"ſtance with the fundus uteri, towards the left ſide; where it ſeem'd to have "taken its origin, by the means of various ducts and canals." As no mention is made of the ovaries, or tubes, no more than in a certain hiſtory which was publiſh'd five and thirty years ago, in the two cities next to this, as if of a dropſy included in the uterus, whereas the uterus did not contain the water, as it ought to have done; and as you may ſee, in particular, in the obſervation of Henricus Alb. Nicolai (*x*), wherein a large cyſt, diſtended with water, rais'd itſelf up from the left ſide of the fundus uteri, quite to the diaphragm; I lie under a neceſſity of doubting in this caſe, although I am not ignorant that Riedlinus (*y*) has, with good reaſon, ſuppos'd "a dropſy

(*q*) N. 70.
(*r*) N. 59.
(*s*) Vid. epiſt. 65. n. 17.
(*t*) Oſſervaz. 9.
(*u*) Act. n. c. tom. 6. obſ. 94.
(*x*) Dec. obſ. illuſtr. anat. obſ. 9.
(*y*) Obſ. 56. cit. ad n. 64.

" which is ſaid to be uterine, to have its origin and ſeat, for the moſt part, " in the teſtes; from whence thoſe ſacs, which are frequently ſo large, and " contain ſo large a quantity of water, and cover all the inteſtines . . . . are " deriv'd."

But the younger du Verney (*z*) found two large cyſts of that kind, riſing from the left ſide of the uterus, and embracing the ovary; but, in one of the women, not dilated, as he ſays, and ſhut up within another cyſt of a larger ſize: in the other, dilated, but not at all in proportion to the magnitude of the cyſt in which it was comprehended. I ſhould, perhaps, have conjectur'd that the external coat of the ovaries, expanded by water, had made theſe large cyſts, if he had not ſaid that they roſe from the ſide of the uterus.

66. There are, alſo, inſtances of a dropſy that relates to the tuba Falloppii; ſome of them, like the former, certain, and others doubtful. In the number of the certain ones I reckon that which was ſent from Munnickius, and publiſh'd by the compilers of the *Bibliotheca Anatomica* (*a*). For it is ſufficient to look at the figure, in order to be convinc'd that the right Falloppian tube had dilated itſelf, ſo as to contain a hundred and twelve pints of water, under which diſeaſe the unhappy virgin labour'd eighteen years. Nearly equal to this, was that dropſy of the tubes which Siboldus has deſcrib'd; but that deſcrib'd by Cyprianus ſtill larger, as far as I can judge from the *Acta Eruditorum Lipſienſia* (*b*); for neither of theſe authors was in my hands when I wrote theſe things. Nor do I doubt but the dropſy of the cornua uteri was really in the tubes, when I examine the figure given by Tulpius (*c*), who deſcribes it; which, as well as that of Munnickius, and others alſo, is wanting in the Sepulchretum. And I wiſh, with all my heart, that Sponius, whoſe obſervation I have quoted above (*d*), had join'd a delineation therewith; for he would, by that means, have taken away a ſcruple from me, which a deſcription cannot remove.

He looks upon his ſac as a dilatation of the tube, and he deſcribes the tube as embracing the ovarium, and carried upwards from thence, " to the " extent of half a foot higher than the natural ſituation thereof requir'd;" as the ſac reach'd quite to the enſiform cartilage. But the tube is generally produc'd, on the ſurface of the ſac, beyond its natural extent; not when the tube itſelf, but when ſome other neighbouring part, as, for inſtance, the ovarium, is dropſical: as du Verney (*e*), and Targioni (*f*), have ſufficiently ſeen; and as Schacherus (*g*), and Maggi and Dodi (*h*) have even delineated. Therefore, ſince Sponius does not at all repreſent the ovarium as being dropſical; and complains that the incautious ſurgeon, by a haſty diſſection, had cut into the peritonæum, together with the muſcles; I ſuppos'd that this dropſy might be number'd among the other examples of a dropſy of the peritonæum (*i*).

But if it ſeem otherwiſe to you, and you chooſe to take away this, or any other example, from thence, which I have no objection to your doing, a ſufficient number will ſtill remain there. But to what claſs ſhall I refer the

(*z*) Mem. de l'Acad. R. des ſc. a. 1703.
(*a*) Cit. ſupra ad n. 59.
(*b*) A. 1685. m. April & a. 1701. m. Febr.
(*c*) Obſ. med. l. 4. c. 45.
(*d*) N. 50.
(*e*) (*f*) (*g*) (*h*) Cit. ſupra ad n. 64.
(*i*) N. 50.

obſervation of Rolfinc (*k*), who found the left ligament of the uterus diſtended with water, to ſuch a degree, "in the upper part," as to "occupy "the whole cavity" of the belly? Can we ſuppoſe that one ſo well ſkill'd in anatomy as he was, if he had ſeen a dilatation of the ovarium which was annex'd to this ligament, or of the tube, would not have taken notice of it? Or ſhall we take for granted, that there is a peculiar dropſy of this ligament, owing to water being collected betwixt its two membranes, beſides the other dropſies in the parts that lie near thereto? This appearance he ſaw in a woman, who, notwithſtanding her abdomen had grown out into a great bulk, and ſhe had been without any menſtrual diſcharges, for the whole ſpace of three years, had, nevertheleſs, a good appetite, and went about her houſhold affairs as uſual, though with ſome difficulty, till ſhe was carried off ſuddenly; as another woman, ſpoken of by Brehmius, was alſo (*l*); who, however, had her heart increas'd very much in its ſize; and the matron mention'd by Targioni: for I do not remember, at preſent, out of all the examples of diſeaſes of this kind, that I have taken notice of, any others beſides theſe three, who have died unexpectedly.

67. Now if you attentively collect, in your mind, the ſigns that I have mention'd from time to time, as I reckon'd up the obſervations of almoſt every one of theſe dropſies, you will certainly obſerve, how much they agree one with another, and with the dropſy of the peritonæum; and will underſtand, that if the great bulk of the belly has already continued a long time (du Verney the younger (*m*) requir'd more than the ſpace of two years from the firſt beginning:) if the tumour has increas'd, by degrees, as in gravid women, without much inconvenience, and without any, or, at leaſt, without a great change of colour in the ſkin: if purging and diuretic medicines have afforded no alleviation: if the lower limbs have not become tumid, till the latter part of the diſeaſe: if there are theſe ſigns, I ſay, you will underſtand that the woman does not labour under an aſcites, but, generally, under ſome other confin'd dropſy: and yet it does not, of courſe, follow, that ſhe does not then labour under an encyſted dropſy, though any one of theſe marks may be wanting.

For there have ever been ſome, who complain'd of internal pains of the belly for inſtance, that is, in conſequence of the viſcera, and particularly the inteſtines, being compreſs'd by the neighbouring weight, and diſtention of the ſac; this ſac being more fix'd, or prominent, in a certain place; which you eaſily perceive muſt happen more frequently, in the dropſy of the ovarium, or any ſimilar part, than in that of the peritonæum. And there may be ſome, though this is much more extraordinary, to whom the medicines that are adminiſter'd may give a little relief, if they happen to diſcharge water; not that which is included in the cyſt, but that which is extravaſated into the cavity of the belly: for that this was, ſometimes, the caſe alſo, though the water was generally in a ſmall quantity only, has been remark'd by du Verney, whom I have already quoted; and he obſerves that it happens, at the time when the cyſt can admit of no more water: from whence he ſays

(*k*) Sepulchr. ſect. hac 21. obſ. 61. & 55. §. 24.
(*l*) Cit. ſupra n. 65.
(*m*) Cit. ibid.

it is, that the lower limbs do not ſwell, till very late in the diſeaſe, as I have already ſaid.

But in regard to the ſigns, by which you may diſtinguiſh the dropſies in queſtion, from each other, you yourſelf muſt perceive that there is nothing which you can expect from me; for there is ſuch a propinquity betwixt the ovaria, the tubes, and the ligaments, by which they are connected together, and ſuch a neceſſity for the functions of them all, in the work of generation, that it is out of our power to gather any certain inferences either from the ſituation of the tumour, or from the faculty of generation in the woman being impair'd, which of theſe parts is dropſical. And indeed if the woman ſhould conceive, in the mean time, you cannot from thence argue, that theſe parts are not affected; for you very well know it to be ſufficient for this purpoſe, that they are ſound on either ſide. Yet however, you will naturally ſuppoſe that ſome one of them, and particularly the ovarium, as this is moſt frequently the part affected, may be ſwell'd, when the beginning of the tumour ſhall diſcover itſelf in the ſeat thereof. You will ſuppoſe that it may be ſwell'd, I ſay; for the tumour may even be there, and yet not ſeated in theſe parts.

We muſt, then, alſo, conſider whether the tumour may not be of another kind; as, for inſtance, when Gandolphius (*n*) found each ovary equal in magnitude to a man's head, and more than five pounds in weight, but of one and the ſame compact ſubſtance every where; or when he ſaw the ſame kind of diſorder, in one of the ovaries of another woman, which weigh'd about fifteen pounds: but even tumours of another kind occur, not very rarely, in the ſame ſituation, in particular the ſteatoma (which kind has been found by me (*o*)); and this, as Schacherus (*p*) has admoniſh'd us, ſometimes may be taken for a dropſy of the ovarium. You, however, by diligently weighing all the ſymptoms that have preceded, and accompany the diſeaſe, will more readily ſuſpect the tumour to be of a dropſical kind, when the temperature of the body, the diet, and diſeaſes have been, or are, of ſuch a kind, as to diſpoſe women to dropſies. And by what reaſonings you ought rather to ſuppoſe the water to be collected betwixt the muſcles, and the peritonæum, than within this membrane, I have endeavour'd to ſhow you above (*q*), as far as is poſſible in diſorders of this kind: and if any thing ſhall occur to my mind, in the mean time, either by reading, or thinking, that may tend to diſtinguiſh other dropſies, even by the ſlighteſt conjecture, I will not omit it in the next letter (*r*).

68. But if it is difficult to determine the nature of theſe dropſies, of which I have ſpoken, it is ſtill more difficult to cure them. Nor would I have you ſay that nature itſelf has ſhown in what way this may be done, when ſhe reſtor'd to health the woman of whom Brehmius (*s*) writes, by diſcharging a fluid through a very ſmall foramen, every other day, as I have already ſaid. For that dropſy ſeems to have been in the peritonæum, as it really was when, according to the relation of Anhornius (*t*), nature attempted the ſame way three times; and, at firſt, with advantage, yet afterwards unſucceſsfully. But

(*n*) Hiſt. de l'Acad. R. des ſc. a. 1707. obſ. anat. 4.
(*o*) Supra n. 34.
(*p*) Diſſ. ſupra ad n. 64. cit. §. 13.
(*q*) N. 60.
(*r*) N. 40.
(*s*) (*t*) Cit. ſupra ad n. 59.

as

as I have ſpoken above of the cure of the dropſy in the peritonæum, I inquire, here, after the method of cure in thoſe dropſies, which are included in a ſac or cyſt, and contain'd in the cavity of the belly. The younger du Verney (*u*), who was a ſurgeon as well-experienc'd in the operation of paracenteſis as any one whatever, expreſsly denies his having ever ſeen any one cur'd, who was afflicted with an encyſted dropſy; and, what is more, aſſerts that he had ſeen many women, who being troubled with no other diſagreeable ſymptom, but that of a cumberous belly, and being deſirous to get rid thereof, by having the water taken away, had been carried off in a ſhort time; whereas they might, otherwiſe, have liv'd long, and ſometimes very long, as the examples frequently pointed out demonſtrate. And ſeveral others have likewiſe ſeen that ſpeedy death has often been the conſequence of paracenteſis in theſe diſeaſes.

Nor is it to be wonder'd at: for nothing more frequently happens, than that the air, being admitted to the water, which is of itſelf, already, of no good nature, as its brown colour, for the moſt part, ſhows, or to the parts of the ſac which are already lax, vitiated, and ulcerous, ſoon brings on fatal changes. For from hence it chiefly happens, that although, at firſt, the patients ſeem to themſelves, and to others, to have receiv'd much alleviation from the operation, yet inſtead of that kind of water which was firſt drawn off, and was not of a very deprav'd nature, that which was taken away the ſecond, and the third time, or flows out afterwards, may be green, or black, or turbid, fæculent, and ſomewhat bloody, or of a very bad ſmell; and, finally, not without purulent matter, as you will eaſily learn from reading over the obſervation of the ſurgeon laſt-quoted, made on a woman of thirty years of age, and on a virgin of ſixty, one of Riedlinus (*x*), and one, and another, of Anhornius (*y*), made upon three women. And what do you ſuppoſe muſt happen, when the water is either already, of itſelf, purulent, or fœtid?

Tulpius (*z*) ſaw nine pints of water, and pus, in the tubes. In the ovarium, Maggi and Dodi (*a*) found a fœtid humour. And what will you ſuppoſe muſt be the conſequence, when the internal ſurface of the ſac is full of abſceſſes, as du Verney found it. Moreover, even though the water may neither be purulent, nor fœtid, and the ſac without abſceſſes, it certainly has, very often, either hydatids fix'd to it internally, or water, or ſome other matter, divided into many leſſer ſacs: from which circumſtance it happens, that the water being drawn off from one ſide, the ſwelling of the abdomen is not remov'd on the other, or the flowing out of it ſoon ceaſes; and if the ſurgeon then forces on the cannula, he feels an obſtacle to its paſſage: what is to be done then I would be glad to know? Are all the ſeparate ſacs to be open'd? Trew (*b*) found it neceſſary to open the membranous interceptions of the leſſer ſacs, "more than ten times," in order to draw out all the water from the larger ſac, which contain'd all the others.

But muſt we make uſe of the ſame method to obtain a cure in the living body, as we do to examine into the diſorder after death? Or if it were proper ſo to do, would it be in the power of any ſurgeon to ſee the leſſer facculi,

(*u*) Cit. ad n. 65.
(*x*) Ephem. n. c. cent. 5. obſ. 67.
(*y*) Eorund. cent. 9. obſ. 100. n. 3 & 4.
(*z*) Cit. ad n. 66.
(*a*) Ad n. 64.
(*b*) Ibid.

which

which lie hid within the deep cavity of the belly, and pierce through each of them ſeparately, without wounding any inteſtine, or other neighbouring part, at the ſame time? Beſides, what if there ſhould be innumerable hydatids, as I ſaid there frequently are? What? If all the cells ſhould not contain water, but ſome a matter like cheeſe, or like a pultice, as in the obſervation of Miegius (*c*): What? If a large ſcirrhus were ſeated there, over and above, ſuch as was ſeen by du Verney. Other conſiderations I omit; for from theſe you already ſee, with ſufficient clearneſs, why this paracenteſis muſt happen to be not only uſeleſs, but even hurtful, to the miſerable woman.

69. But ſuppoſe even that there is only one ſac, and that this ſac is not divided by any partitions, as, beſides Maggi and Dodi (*d*), Vacher (*e*), Benevolus (*f*), and Targioni (*g*), have found it, and not vitiated with abſceſſes, and tumours; (for Benevolus obſerv'd globular bodies prominent inwardly, ſome of which were even larger than eggs, and Targioni a ſarcoma of the bigneſs of a kidney, which hid ſmall abſceſſes in itſelf): finally, ſuppoſe that there are no cells, which contain a different kind of matter; and that the water which is contain'd is not of a very deprav'd nature. What follows from hence? Do you think that the caſe would be then a fair ſubject for the operation? Targioni ſays not. As he fears, not only leſt the omentum, which is interpos'd, or the inteſtine, or ſome other viſcus, ſhould be wounded, and leſt a part of the water ſhould be pour'd out from the perforated ſac, into the cavity of the belly; the latter of which he ſays may, however, be avoided, if the woman lie in a prone poſture; but he is particularly afraid of thoſe conſequences, which Schorkopffius (*h*) was formerly afraid of, leſt the membrane of the evacuated ſac contract a gangrene; or, at leaſt, a ſuppuration; chiefly on account of the air being admitted; or if it does not contract either of theſe diſeaſes, leſt, like other folliculated tumours, it be again fill'd with its proper humour, that is with water.

To me it certainly happen'd that, while I was reviſing theſe things, I was conſulted by a barren woman; who having had a diſtention of the abdomen, for a year before, not without a very great reſiſtance, on the left ſide thereof; and having us'd the aſſiſtance of phyſicians in vain; found, all of a ſudden, about the ſpring of this year, that while ſhe happen'd to laugh, and ſhake her belly with great vehemence, ſomething burſt aſunder therein, with a kind of a crack; and it immediately became ſofter, at the ſame time that ſhe felt an unuſual weight, in the lower part of the abdomen, with a ſenſation (which had never been before) of fluctuation, and of a certain weight falling down to that ſide, on which ſhe turn'd herſelf. And theſe ſymptoms having diſappear'd, by the help of remedies which diſcharg'd a great quantity of ſerum, by the kidnies, and inteſtines, the woman ſeem'd, to herſelf, to be in very good health for fifteen days, but no longer.

For after that time, the abdomen return'd again to its former bulk, and tenſion; ſhe being of a good colour in her face, as ſhe always was before; her feet not being tumid: and, except certain pains of the belly, which were troubleſome at intervals, the large bulk thereof, and the diminution of her

(*c*) Act. n. c. tom. 1. obſ. 85.
(*d*) (*e*) (*f*) (*g*) Cit. ad n. 64.
(*h*) Diſſert. de hydr. ovar. th. 25.

menſtrua,

menſtrua, all which circumſtances had alſo been obſerv'd before, ſhe was agile in her body, robuſt, and in extreme good health. That the cyſt, therefore, after diſcharging its original fluid, ſhould not be again diſtended with a freſh one, it would be neceſſary, if poſſible, to conſume, or extirpate it entirely; as is done in external follicles. But who could propoſe, or even bear, the firſt of theſe operations on a large ſac that is hidden among the viſcera? The ſecond, indeed, I know has been propos'd by ſome, who were encourag'd thereto, by that well-known, but very rare, cure of Abr. Cyprianus: yet whether any one has made the trial within theſe thirty years, or more, ſince it was propos'd, I cannot determine.

What might be the cauſes to prevent them, it is not difficult for you to conceive: to omit the greater part of which, if the cyſt were always ſupported by one root alone, on which a ligature might eaſily be made; as in the obſervation of Mauchartus (*i*), or in that of Schröckius (*k*); you would, perhaps, begin to give ear to the propoſition. But What? If there were more roots than one, or if there was one very broad, and not, as it was with them, "very narrow," or "of the thickneſs of a man's thumb:" what? If the cyſt ſhould be connected to one part, and to another, and even at a great diſtance from that part of the abdomen, which, in imitation of Cyprianus, you would cut into. Yet this author had learn'd from an ulcer, through which he could feel the carcaſe of a fœtus, which had lain there twelve months, in what part it was to be cut into; juſt as Degnerus (*l*), if a large dropſical tumour, by burſting aſunder betwixt the peritonæum, and the muſcles, had left not a large, but a narrow paſſage, could, likewiſe, very well know, by introducing a probe, which way it might be laid more open with the knife; ſo that a cyſt bigger than an ox's bladder, which came away of itſelf, might be extirpated by the ſurgeon.

70. Muſt we have no hopes then, you will ſay, of a cure in an internal incyſted dropſy, becauſe it is not poſſible, either to conſume, or extirpate, the cyſt? The younger du Verney (*m*), nevertheleſs, hop'd for either a perfect cure, or a great alleviation, if at any time after the water was drawn off, the parietes of the cyſt, when collaps'd, ſhould coaleſce with each other; and by this means ſhut up the extremities of the veſſels, by which the water was carried thither: and this he ſuppos'd to have happen'd, in a virgin of twenty years of age, whoſe belly had begun to ſwell almoſt two years before, without any change in the colour of the ſkin: and, in like manner, in a widow-matron, who, being now advanc'd in age, had been afflicted with a ſurprizing tumour of the belly for ſix or ſeven years: from both of whom having taken away the water, he ſo perfectly cur'd the firſt, that ſhe married, and brought forth children; and gave great eaſe to the other, and long freedom from the diſorder, as ſhe perceiv'd nothing of it for more than two years together, till, by degrees, the belly return'd to its former magnitude. But he thought it neceſſary, that the cyſt ſhould be looſe, and unconnected, even at that time, as the uterus is in pregnant women; without doubt, fearing, leſt, if it was connected here and there, the parietes ſhould be, ſo much the

(*i*) Cit. ad n. 64.
(*k*) Eph. n. c. dec. 2. a. 8. obſ. 233.
(*l*) Cit. ſupra ad n. 61.
(*m*) Cit. ad n. 65.

more,

more, prevented from approaching one to another, and coaleſcing. He alſo thought it neceſſary, as I ſuppoſe, that there ſhould not be more than one cavity in the cyſt; which otherwiſe muſt be an obſtacle to the coalition. But I could wiſh he had expreſly requir'd it: for, perhaps, as he certainly ſuppos'd, that the cyſt might be conceiv'd, by every body, to be unconnected, if it chang'd its ſituation, in conſequence of every change of ſituation in the body; ſo he would have ſhown us from whence we might conjecture that the cyſt had but one cavity. It came into my mind, from whence this might be conjectur'd, as I have ſaid above (*n*): but we muſt inquire ſtill farther into that ſubject; and into this moreover, how we may know, that the parietes of the cyſt are not vitiated with tumours, or abſceſſes. And he had thought it neceſſary, in the firſt place, that there ſhould not be ſo great a quantity of water, as that the viſcera, being forc'd up very high, muſt be liable to a very great compreſſion, betwixt the cyſt, and the diaphragm: but it is ſurprizing that this never had happen'd in the widow he ſpeaks of. However, it is difficult to find women who are willing to ſubmit to the operation of paracenteſis, before they are loaded with a great quantity of water: and, indeed, it generally happens that they do not ſubmit to it, till their ſtrength is greatly impair'd, and their viſcera injur'd; or, at leaſt, affected with diſeaſe: and then they cry out for any kind of aſſiſtance whatever.

Yet there is, you will ſay, an example of a woman (*o*), who, having, at length, ſuffer'd the water to be drawn off, when the caſe was ſo far advanc'd, that "the ſkin ſcarcely adher'd to her bones," was perfectly cur'd by this means; notwithſtanding on the firſt, and the following days, bad ſigns appear'd; except that a fiſtula of the belly remain'd: cur'd, I ſay, ſo that ſhe conceiv'd, and brought forth children, and liv'd in a corpulent and flouriſhing ſtate of health ſome years; till, at length, ſhe was taken off by an epidemical fever. I ſhall not ſay, here, that the woman was young: nor ſhall I ſay that while ſhe had a tumour of her belly, a very great difficulty of breathing, a cough, and tumour of the feet, did not attend it. I ſhall obſerve this one thing, that theſe ſigns are common both to the internal encyſted dropſy, and the dropſy of the peritonæum; and that it does not certainly appear, from the hiſtory, that the woman had labour'd under the one, rather than the other; eſpecially as another woman; who had been, likewiſe, ſuppos'd to be afflicted with a dropſy of the tube, from the ſame ſigns (*p*), and who, having been extremely well on the firſt day from the drawing off of the water, was ſoon after attack'd with unkindly ſymptoms, and died on the ſeventh day from the diſcharge of the water; ſhow'd that water, to thoſe who diſſected the body, to have been collected betwixt the peritonæum, and the indurated omentum: and this is openly declar'd with a candour that deſerves every kind of commendation.

And, indeed, that, agreeably to the ſame deſire after truth, I may conceal nothing from you, take this for granted: if any one contend that theſe two cures of du Verney, related rather to the dropſy of the peritonæum, I have nothing to reply in objection to his opinion; eſpecially, as it was not in his

(*n*) N. 64. in fin.
(*o*) Eph. n. c. cent. 9. obſ. 100. n. 5.
(*p*) Ibid. n. 7.

power to examine by diſſection, that virgin who was cur'd, and as the widow, whom perhaps he might have examin'd, he did not examine: and even in the place where he firſt related both theſe cures, there, as I have ſaid above (*q*), he has expreſly aſſerted, that he had ſeen none of them cur'd, who were troubled with an internal encyſted dropſy.

71. In the mean time, till others can teach more certain methods of cure, I ſhould ſuppoſe it would be better to imitate that cautious phyſician Targioni (*r*), and to be content to make uſe of the *palliative* cure in the internal encyſted dropſy; which Schorkopffius (*s*) had, alſo, "principally" recommended. Targioni has many admonitions to this effect, which you may ſelect, and prudently follow; not neglecting even this laſt, that when dropſies of that kind are already large, thoſe poſtures, motions, and exertions, of body ought to be avoided, from whence the cyſt may preſs too much upon the viſcera, or the viſcera upon the cyſt. For with how much eaſe cyſts, which are not very large, are ſometimes ruptur'd, the hiſtory that I related to you above (*t*) ſufficiently demonſtrates. And a violent fit of laughter, in that woman, did the ſame thing which it had done in a man, of whom Hoffmann (*u*) has left us an obſervation. For he very properly argues, that from too violent laughing, the ſac in the thorax, which had contain'd a great quantity of water, was ruptur'd; becauſe the difficulty of breathing, which had exiſted before, together with a fix'd pain of the left ſide, was immediately chang'd into ſuffocation: and as this carried the patient off in a ſhort time, in the left cavity of the thorax was found, not only a great quantity of water, but in the ſame place, alſo, many "lacerated membranes, and "veſicles, ſeparated from the vertebræ, and ribs, which pretty plainly ſhow'd" a rupture of a ſac, and perhaps a ſudden effuſion of very acrid water. For it is not always ſo eaſy to diſcharge the extravaſated water by the urinary paſſages, as it happen'd then in that woman: for in the man even time was wanting. From whence you will, alſo, more eaſily underſtand, how greatly they err, who uſe the more violent remedies, againſt dropſies of this kind in particular; I mean ſuch as emetics, and purgatives. And, indeed, Wepfer (*x*), having found, in a woman who had an aſcites come on after an enormous vomiting, the ovarium enlarg'd in its bulk, and lacerated to a ſurprizing degree, ſuppos'd the water to have flow'd out from hence, into the cavity of the belly. And you yourſelf will form the ſame judgment of thoſe two women whom I have taken notice of (*y*) from Schacherus, and Guttermann, as being found to have an aſcites, at the ſame time that there was a rupture in the dropſical ovarium; if, in reading over the hiſtory of each woman (*z*), you obſerve what kind of medicines they had taken, and what effects they had ſuffer'd from thence.

But while I am deſirous of gratifying your wiſhes, I have carried my diſcourſe out to ſuch a length, as I did not at all intend from the firſt; and that almoſt without perceiving it. I therefore make an end of writing at preſent. Farewell.

(*q*) N. 68.
(*r*) Cit. ſupra ad n. 64.
(*s*) Theſ. 25. ſupra ad n. 69. cit.
(*t*) N. 69.
(*u*) Med. rat. t. 4. p. 4. c. 14. obſ. 7.
(*x*) Apud Scorkopffium modo cit. th. 23.
(*y*) N. 64.
(*z*) Schacheri vid. §. 16. in fin.

LETTER the THIRTY-NINTH,

In which the internal preternatural Tumours of the Belly that remain are ſpoken of.

AS I have treated ſufficiently of the aſcites, and other univerſal tumours of the belly, in the preceding letter; it now follows to ſpeak of thoſe which diſtend ſome particular parts thereof; ſome of the upper and lower, however, excepted: as the tumours, with which they are affected, are already written of in other letters *(a)*. Valſalva then has left theſe five obſervations, relative to thoſe which occupy the middle and the lower parts of the belly.

2. George Marcheſi, a nobleman of Forli, who labour'd under a large internal tumour of the belly, had a pain in his back, and in his loins on the left ſide. His urine he diſcharg'd frequently, but the inteſtinal excrements not without the greateſt ſtrainings. He had an appetite for food. Yet all the parts of the body being, at length, quite emaciated, and extenuated; except that the left ſide of the ſcrotum had been long affected with a hard tuberoſity; and on the laſt fifteen days of his life his feet having a very conſiderable œdematous tumour; his left foot was ſeiz'd with an eryſipelas, and this noble youth died on the day following.

The belly being open'd, in its center a large bulk of tumour appear'd, which ſo compreſs'd the viſcera every where, that if they were not forc'd quite out of their natural ſituation, they were, at leaſt, very much contracted, and, in many places, of a livid hue; although, in other reſpects, as far as could be perceiv'd by the eye, ſound. This tumour hung from the meſentery; being cover'd, on its whole anterior ſurface, with the omentum, which was extenuated, and in many places lacerated. The omentum being ſeparated, and taken away from thence, the figure of the tumour came ſomewhat better into view. This figure was very irregular: and, on the upper part, two protuberances were extended towards the hypochondria, one on each ſide; ſo that one of them not only cover'd the liver, and the other the ſpleen, but theſe viſcera were even conſiderably forc'd upwards thereby. And the ſtomach itſelf was not quite free from preſſure; being ſomewhat confin'd by the middle body of the tumour, from which the two protuberances were ſent off. And the weight of the whole tumour ſeem'd to be about five and twenty pounds.

(a) Epiſt. 36 & 38 ex parte.

But even in other parts, on the outſide of the tumour, the whole meſentery was turgid with the ſame kind of ſubſtance, whereof the tumour conſiſted; and with this tumour another tumour was alſo join'd, of the ſame nature with that which was in the left teſticle. That is to ſay, the nature of both thoſe tumours was, in great meaſure, ſimilar to that of cancerous tumours; and, in particular, of ſome which are obſerv'd in the breaſts. The bodies whereof they conſiſted, moſt of them, approach'd to a glandular ſubſtance, and reſembled puff-balls in their figure, or as they are call'd in our language *tartuffi*. They were of a different magnitude: ſome of them were whitiſh like fat, but others red like fleſh; and many were even blackiſh, as if from concreted blood. In ſome of the interſtices of the body pus, but in others ichor, and in ſome a yellow ſerum, ſtagnated. Yet in no part of the tumours was there more ſerum, than in that which was in the teſticle.

3. We have, now, all the circumſtances that relate to this hiſtory, a part of which I have already produc'd (*b*), having promis'd the remainder, with the obſervations of Valſalva; ſome ſelect ones of which I then intended to publiſh in the latter end of his diſſertations. And indeed this is not one of the moſt inconſiderable, if we attend to the extenſion, and weight, of the tumour, at the ſame time. For in regard to the former property, it does not eſcape me, that other large tumours of the meſentery have, ſometimes, ſo extended themſelves, in their upper part, to the liver, or ſpleen, as to have made phyſicians ſuppoſe, upon examining the abdomen of the patient, that one, or other, of theſe viſcera, was converted into a ſcirrhous maſs. But, here, beſides that it cover'd, with its upper appendages, both the liver, and the ſpleen, it produc'd its lower appendage downwards, in ſo extraordinary manner, as to join it with the tumour of the left teſticle.

You will read, indeed, the deſcription of a ſteatoma, by thoſe celebrated men Hebenſtreit (*c*), and Matthia (*d*), which being in the meſentery, had drawn up one teſticle within the belly to itſelf, inſtead of being extended downwards thereto; and although, in the ſecond obſervation, it was produc'd to the femur, and ſurrounded the crural veſſels, yet in neither did it aſcend to the liver and ſpleen. But the weight of the tumour, in both of theſe obſervations, and ſtill more in that which will be taken notice of below (*e*), was indeed greater than in that made by Valſalva. Yet who can deny that the tumour deſcrib'd by him, was one of the large ones that are found in the meſentery, even when we conſider its weight? Since Wharton (*f*), who mentions many of them, gives account of no more than two conſiderable tumours; one of which, having been obſerv'd by him, weigh'd about ſeven pounds, and the other that had been obſerv'd by Parey, weigh'd ten pounds and a half, though its ſize is ſaid to be "wonderful, and almoſt incre-" dible."

4. As to the ſymptoms remark'd in the living patient, you will certainly not expect me to ſay why, although he had an appetite for food, he became emaciated in his whole body, if you conſider by which way the chyle is to be carried into the blood; nor yet why the feet ſwell'd to ſuch a degree, if

(*b*) Epiſt. anat. 2. n. 67.
(*c*) Diſſert. de part. coaleſ. morb. §. 17.
(*d*) Commerc. litter. a. 1739. hebd. 48.
(*e*) N. 8.
(*f*) Adenogr. c. 11.

you conſider through what parts the iliac veins, and the cava inferior, paſs. Moreover, the weight, and bulk, of the tumour did not only preſs upon the chyliferous, or ſanguiferous veſſels, but alſo the bladder, and inteſtines. For which reaſon, as the one could not eaſily be diſtended, and the other not eaſily dilated, the patient was under a neceſſity of making water frequently, and of diſcharging his excrements with great ſtrainings.

The laſt of theſe circumſtances is ſhewn, by Fernelius (*g*), to happen often in this diſeaſe, and for the ſame reaſon; and both of them, or, at leaſt, a coſtiveneſs, and a difficulty in diſcharging the urine, you will ſee obſerv'd by Parey, and explain'd in the ſame manner, in the caſe I took notice of juſt now (*h*), which is alſo transfer'd into the Sepulchretum (*i*). In that caſe a pain is, at the ſame time, ſpoken of, which, as in our caſe, was very troubleſome in the back, and the loins; and you know to which of the vertebræ the meſentery is connected. This pain, and difficulty of making water, are not wanting, likewiſe, in the next hiſtory of Valſalva.

5. A woman of ſixty years of age, having complain'd, for many months, of a certain tumour in the umbilical region, began to be troubled with a heavy and oppreſſive pain, towards the back, which was ſometimes attended with a difficulty in making water. The tumour was every day increas'd, though it was already as large as the uterus in a pregnant woman can be; and, in conſequence thereof, the pain I have deſcrib'd increas'd alſo: eſpecially when the woman, being in a recumbent poſture, turn'd herſelf from one ſide to the other.

Upon opening the belly after death, a great bulk of tumour appear'd. This tumour had its baſis in the center of the meſentery, and was connected with the adipoſe membrane of the right kidney; but adher'd to the termination of the inteſtinum colon, in ſuch a manner, that they could not be divided without laceration. The ſubſtance of the tumour was in ſome places firm, but in others ſoft, ſo as to reſemble a ſteatomatous matter. The right kidney abounded with particles of ſand, and had its pelvis very much dilated. But the remaining viſcera were ſound.

6. Although it is not to be doubted, but that difficulty in making water, and the pain which lay towards the back, related, in ſome meaſure, to the kidney alſo; as this had ſandy concretions form'd in it, and could not but have its proper membrane ſomewhat pull'd away, at the ſame time that its common, that is the adipoſe, membrane ſuffer'd diſtraction; yet this diſtraction was brought on by the weight of the annex'd tumour, and the frequent difficulty of making water, in the latter part of pregnancy, happens from the bulk of the greatly-enlarg'd uterus, with which this bulk of tumour, as I have ſaid, might have been compar'd: and if we ſuppoſe it to have been more protuberant on the right ſide, near to the kidney, as that connexion ſeems to prove, it may from hence, alſo, be eaſily underſtood, how the dilatation of the pelvis had been brought on; that is, by the ureter being frequently compreſs'd, and the deſcent of the urine being obſtructed.

But be this as it will, you will, perhaps, be ſurpriz'd at one thing, in both of theſe hiſtories, which I have given you; I mean, that beſides the pain in

(*g*) Pathol. l. 6. c. 7.
(*h*) N. 3.
(*i*) Sect. hac 21. obſ. 38.

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the loins and back, which was a neceſſary conſequence from the weight of the diſtracting tumour, no particular pain is ſpoken of, that belong'd immediately to the tumour itſelf; or, at leaſt, to thoſe membranes of the meſentery, betwixt which it lay. But you will ceaſe to wonder, when I ſhall have ſhown that the obſervations, and writings, both of the ancients, and moderns, agree with the hiſtories of Valſalva. Under the name of ancients, I do not underſtand here, any more ancient than Benivenius, who flouriſh'd about the beginning of the ſixteenth century. Yet I do not think that theſe diſeaſes of the meſentery were unknown to thoſe who wrote long before his time. For although they were not accuſtom'd to diſſect human bodies, yet they frequently us'd to diſſect the bodies of brute animals, in ſome of which it cannot be ſuppos'd but they muſt have met with this appearance, that I even met with in a little hen-chicken.

This chicken was greatly emaciated, and greatly voracious; yet her belly was equally tumid, as if ſhe was about to lay an egg, which as yet ſhe was too young to do. This tumour was made up of roundiſh and ſcirrhous bodies, many of the ſize of a bean, and ſome of the bigneſs of a cheſnut, lying betwixt the folds of the inteſtines, and ſome of them even fix'd thereto; all of them of a granulated ſurface, and even granulated in their ſtructure; except that one of the largeſt contain'd a great ſubſtance, every where ſurrounded by thoſe very hard granules, and reſembling a white, and tender, but juiceleſs, and almoſt friable ſuet: ſuch as, in the preceding letter (*k*), I deſcrib'd in the uterus, and the ovaria, of a certain woman. But here the ovarium was found, together with its very ſmall eggs, as both of the pancreas were; and, if you except the increas'd magnitude, the liver alſo, and ſpleen, and indeed, the inteſtines themſelves, were ſound.

It therefore does not ſeem probable to me, that no tumour had ever been obſerv'd in the meſentery, by cooks, by butchers, by thoſe who ſacrific'd beaſts, and ſhown to phyſicians; ſince Galen, as I have taken notice to you already (*l*), had ſeen a ſcirrhous tumour round the heart, in a cock, and transfer'd the diſeaſe to human bodies. I ſhould rather ſuppoſe, that what the ancient phyſicians might have hinted, in regard to this ſubject, had been loſt by length of time, as ſo many other things have. For if Julius Pollux, as I have read in Ingraſſia (*m*), "aſſerted, that ſtrumous tumours are form'd "even about the meſentery," certainly either the grammarian himſelf took the hint from ſome phyſician; or, if it happen'd that he ſaw it himſelf, it is difficult to ſuppoſe that the phyſicians who wrote from the latter end of the ſecond century, to the beginning of the ſixteenth (for they ſay that Pollux, as well as Galen, liv'd in the reign of the emperor Commodus) being admoniſh'd by a grammarian, ſhould none of them have ſaid a word about diſorders of the meſentery of this kind.

7. Benivenius (*n*) then found "a callus" (by which I underſtand a hard tumour) among the meſenteric veins of a boy, that obſtructed thoſe veins by its preſſure. And Ingraſſias (*o*) found, in the meſentery of a black, who was publicly hang'd, about ſeventy ſtrumæ, beſides almoſt as many tumours,

(*k*) N. 34.
(*l*) Epiſt. 16. n. 20.
(*m*) De tumor. tr. 1. c. 1. comm. 2.
(*n*) De abdit. morb. cauſ. &c. c. 37.
(*o*) Comm. cit.

adhering

adhereing to the external coat of the inteſtines; in both which kinds of tumours; though ſome were of the ſmallneſs of a vetch, others of a hen's egg, and many of a middle ſize betwixt theſe two; was univerſally contain'd either a liquid, and a mucous matter, or a gypſeous, and ſtony matter. Yet Benivenius, when he mentions the other diſorders of the boy, ſays not a word of pain. And all who knew the black of Ingraſſias, have, with a common, and full conſent, aſſerted, "that he had been extremely healthy, till he was "hang'd," which is a circumſtance really ſurprizing.

Nor, indeed, do I believe that Fernelius (*p*), when he, in general, aſſerted, that a tumour of the meſentery "gave no pain," had ſaid it without having made ſome obſervations, from whence to make ſuch a concluſion; notwithſtanding he immediately adds this reaſon for his aſſertion, "that the part it-"ſelf is incapable of pain." And this I believe ſtill more of Arantius (*q*); as he ſeems to have obſerv'd tumours, in that part, ſo large, as "ſometimes to "exceed the ſize of a pine-nut, and the head of a child:" and he certainly gives the ſigns of it in ſuch a manner, as to ſeem to have had before his eyes a ſtructure ſimilar to that which is deſcrib'd by Valſalva (*r*), in Marcheſi. For it is, ſays he, "a tuberous and unequal tumour, by reaſon of its being made "up of many glandular bodies, connected together; which being ſurpri-"zingly increas'd in their magnitude, cohere with each other, and form un-"equal tumours, reſembling muſhrooms, and ſuch-like vegetations.

But he gives this as the firſt ſign of all, "that the tumour is indolent." Perhaps you will here ſay, that hard and cold tumours, as they call'd them, were obſerv'd by Benivenius, and Ingraſſias; and that Fernelius, and Arantius, certainly did not intend to refer to any other. But certainly Benivenius (*s*), when he found a tumour of a different kind, which had already degenerated into a large abſceſs of the meſentery, remark'd that there had been tormina of the belly, which increas'd every day; and, being grown intolerable, kill'd the patient. And I do not doubt, but you have likewiſe read, even in the Sepulchretum, that colic pains, or pains ſimilar thereto, have been obſerv'd to be the conſequents of abſceſſes, and apoſtems, in the meſentery; according to the teſtimony of Mermannus (*t*), Folius (*u*), Wepfer (*x*), and Sennertus (*y*).

It does not, however, eſcape me, that theſe objections may be made: part of which did not eſcape Marcellus Donatus (*z*), who I ſee had read moſt of thoſe things, that I have hitherto ſaid, of tumours of the meſentery, whereof mention was made in books, even in his time. And as he openly contended, as much as any one, that the meſentery was affected with no pain worth ſpeaking of; becauſe, among its conſtituent parts, he acknowledg'd none to be endow'd with ſenſation, beſides the nerves, and the membranes; the ſenſe of which parts he did not, however, doubt, was made very dull and obtuſe, by the great quantity of fat that lay round them; he judg'd that the pain remark'd by Benivenius, was not a pain of the meſentery, but of the inteſtines. That is to ſay, he ſuppos'd the pain to have been excited in that

(*p*) C. ſupra ad n. 4. cit.
(*q*) L. de tumor. p. n. c. 44.
(*r*) Supra n. 2.
(*s*) L. cit. c. 33.
(*t*) (*u*) (*x*) (*y*) L. 3. ſ. 14. obſ. 30. §. 10. & §. 13. & ſeq.
(*z*) De med. hiſt. mirab. l. 4. c. 7.

tract

tract of the inteſtines, in particular, wherewith the diſeas'd portion of the meſentery was join'd, by the weight of a great quantity of matter, which created the abſceſſes, either compreſſing, or dragging it downwards; to ſay nothing of the acrid exhalation of this matter.

8. Though it is by no means incumbent upon me, to approve of every thing that Marcellus, as I have ſaid, ſuppos'd; yet it does not ſeem poſſible to deny this, that *alvi tormina*; for theſe are the words us'd by Benivenius; ſignify pains of the inteſtines, rather than pains of the meſentery: or, if this ſhould be doubtful to any one, becauſe theſe words are preſently added, "all the "viſcera appear'd to be ſound, the liver, ſpleen, and all the inteſtines, ſhowing "no mark of pain;" it is certain, that in other hiſtories, at leaſt, which I have taken notice of, "a colic," or "pains, like to colic pains," are expreſsly mention'd. And leſt you ſhould imagine that theſe only happen when there is an abſceſs, read Platerus (*a*), and Wharton (*b*), who obſerv'd "colic pains," in thoſe perſons, in whoſe meſentery the former found "hard "and glandular tumours," ſo grown into one ſubſtance with the inteſtines, that, by ſtreightning their canal, they hinder'd the deſcent of the excrements; and the latter, a ſingle tumour, but ſo large as to thruſt the inteſtines to one ſide: and that "a glandular, and fleſhy, more than an humoral, tu-"mour."

But if in the obſervations of Valſalva (*c*), and others, that I have quoted above (*d*), theſe pains are not ſaid to have been brought on, by tumours of this kind, it is to be ſuppos'd, that in ſome the inteſtines were not equally compreſs'd; and in others, that they had not an equal quantity of fæces, or that the fæces were not equally acrid: which firſt circumſtance you will particularly ſuppoſe of the woman, whoſe meſentery, as you will ſee in Coiterus (*e*), was "made "up of many, and thoſe pretty large, ſcirrhi;" but ſhe could ſcarcely ſwallow any thing, even that was liquid. So you will ſay that there were ſome other cauſes, if not the ſame, even in particular abſceſſes of the liver; for we do not read of them all being attended with pains. Excruciating tortures are indeed taken notice of by the ſame author (*f*), in the deſcription of a large abſceſs; but they were ſuch as may be refer'd to the difficulty of making water, and the other inconveniences that are related: ſince not the leaſt mention is made of pains of the belly, or inteſtines. And, indeed, Donatus (*g*) gives an obſervation made by him, of a large abſceſs; as a great quantity of bloody and purulent matter, which was diſcharg'd by ſtool, and a ſordid ulcer of the length of a ſpan, which remain'd in the meſentery, demonſtrated: whereas, in a very long ſickneſs, no complaint was ever heard of pain, unleſs on the laſt day of her life, and diſeaſe.

But much more ſurprizing than others is the hiſtory of Hearnius, which you have in this twenty-firſt ſection of the Sepulchretum (*h*). For in this hiſtory, though other ſymptoms are deſcrib'd, there is not a word of pain in the belly. Which circumſtance is not ſo ſurprizing, on account of twelve, or more pints, of fluid matter, that was in the triple tumour, as on account of the weight

(*a*) Sepulch. obſ. 30. cit. §. 11.
(*b*) Adenogr. c. 11.
(*c*) N. 2. & 5.
(*d*) N. 7.
(*e*) Obſ. anat.
(*f*) Ibid.
(*g*) C. 7. paulo ante cit.
(*h*) Obſ. 36. §. 1.

of

of the whole tumour, which was equal to fifty Swediſh pounds; and its ſituation, which was almoſt the whole ſpace of the meſentery. To this may be added, that the tumour was cloſely connected to the inteſtines, from the duodenum to the middle of the ileum, as if it had coaleſc'd into one ſubſtance with them, ſo that it could not be ſeparated without rupture; and that the quantity of food which was taken in, was ſcarcely ſufficient to ſatisfy the deſire of the patient; as his appetite was continual, and almoſt canine: ſo that we are not at liberty, here, to ſuppoſe either a ſmall quantity of excrements, or that the inteſtines were not compreſs'd; but a far different reaſon muſt be thought of by any one who would endeavour to account for the abſence of pains, which I ſhall endeavour to do below (*i*). For at preſent, it is neceſſary to point out other obſervations, in which theſe pains were not abſent, that you may add them to the Sepulchretum.

There is one of Dolæus (*k*), wherein a tumour, ſomething leſs than that deſcrib'd by Valſalva (*l*), but of a ſtructure not unlike it, was attended with dreadful tenſions, and a troubleſome ſenſation, as if living whelps were nouriſh'd in the belly; but the tumour aroſe from the meſentery: however, "it "was fix'd to the ſmall inteſtines, in ſeveral places: and the inteſtines even "paſs'd through its ſubſtance." The ſecond obſervation is that of Verdrieſius (*m*), who deſcribes the whole meſentery as being "ſteatomatous," after tormina of the belly, and not without a large abſceſs; but, at the ſame time, deſcribes the inteſtines as "cohering cloſely to one another." The third obſervation is that of Laubius (*n*) on a man, who, being afflicted with very troubleſome pains of the belly, had tubercles in the meſentery indeed; but his inteſtines were alſo fill'd with a great number of "ſteatomatous" abſceſſes of the ſame kind. On the contrary Goekelius (*o*) remark'd the whole meſentery, in a moſt noble count, to be beſet with a great quantity of ſcirrhous and ſebaceous fat; and yet "there had been no tormina."

To conclude therefore; in the obſervations produc'd both by the ancients, and moderns, either pain is not ſaid to be join'd with a tumour of the meſentery; or if we do read of it as join'd therewith, it does not appear to have been in the meſentery itſelf, rather than in the inteſtines. And much leſs does it appear in the hiſtory of Jo. Sculteus, which is extant, likewiſe, in the Sepulchretum (*p*); for it does not ſufficiently appear, that the excruciating pains of the belly were on the outſide of the inteſtines: and if it did appear; as the very acrid matter, which was contain'd in the ſix tumours of the meſentery, is ſaid to have corroded, to a great degree, all the vertebræ of the loins; thoſe who attended to the other obſervations, would not be at a loſs to conjecture a different ſeat of the pains, or of the origin of pains, on the outſide of the meſentery: as they certainly would not, in that example which follows:

9. A woman, of eight and twenty years of age, had been troubled, for the ſpace of four years, with pains of her belly, which were ſometimes attended with a ſlight fever: at length, being grown more violent, they carried her off.

(*i*) N. 11.
(*k*) Eph. n. c. dec. 3. a. 5 & 6. obſ. 258.
(*l*) N. 2.
(*m*) Act. n. c. tom. 1. obſ. 87.
(*n*) Eorund. tom. 2. obſ. 108. partic. 2.
(*o*) Eph. n. c. cent. 6. obſ. 94.
(*p*) L. 3. ſ. 14. obſ. 30. §. 12.

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The abdomen of the carcaſe did not appear to have any of that external tenſion, which had been about the umbilical region, in the living body. Yet in the center of the meſentery were two tumours. One of which, being of the bigneſs of a gooſe's egg, lay towards the right kidney, and was internally ulcerated; yet without containing any thing purulent: but the other was much larger. For it was continu'd to the right kidney, inſinuating itſelf, in ſuch a manner, betwixt the internal, and external, coat thereof, as to cover the whole kidney, and could not be pull'd away from it without the greateſt difficulty; and it extended itſelf quite to the os pubis of the ſame ſide, being equal in thickneſs, in ſome places, to two fingers, and, in others, to three. This tumour at firſt ſight reſembled coagulated blood. But the whole of it was inveſted with firm membranes, that were given off from the peritonæum: and it conſiſted, in many places, of a ſubſtance extremely ſimilar to fleſhy fibres, except that they were here ting'd with a black colour, and, in ſome places, were ſo lax, that they ſeem'd to be nothing more than concreted blood.

10. If I were certain that Valſalva perform'd this diſſection while he was as yet a very young man, as I ſuſpect he did, I ſhould certainly believe that ſome aneuriſm was deſcrib'd in this ſecond tumour. But although it was nothing more than what it then ſeem'd to him to be; that is, one of thoſe tumours of the meſentery, of which the queſtion is here; it certainly could not extend itſelf quite to the pubes, and to the right kidney, ſo as to cover it, without forcing, and compreſſing, the inteſtines; nor inſinuate itſelf betwixt the coats of that kidney, and affix itſelf ſo cloſely to the proper membrane of theſe two coats, and the kidney itſelf, without creating long and grievous uneaſineſſes; although they have their origin in that part, yet very often extend themſelves to the inteſtines, and very often ſeem to be pains of the inteſtines, rather than of the kidney, as you are by no means ignorant. In the mean while, I would not have you believe it to be my opinion, that there can be no tumour of the meſentery, which is itſelf the ſeat of pain: I only would have you underſtand all the remarks that I have hitherto made, and produc'd, in ſuch a manner as to perceive, that there is none of all theſe obſervations, from whence it plainly appears that the pain was in the tumour itſelf.

11. And this is really ſurprizing; whether you conſider the quantity of nerves in the meſentery, or the office of its glands. For in the breaſts is a far leſs number of nerves in proportion: ſo that if the glandular tumours of theſe parts brought on the moſt excruciating pain for this reaſon, becauſe " the crude chyle being apt to contract an acrimony, or ſharpneſs, cannot be " ſent into other parts in ſo crude a ſtate, and in ſo great a quantity," as into the breaſts; there would certainly be a more ſevere pain in the tumours of the meſentery (the glands whereof the learned gentleman does not ſeem to have attended to, when he wrote theſe things) as into this part the whole of the chyle flows; and, what is more, in a ſtill cruder ſtate. You would ſay that in the meſentery it is diluted with the lymph, and that it goes on therein, in order to arrive at a farther ſtage, inſtead of ſtagnating, as it does in the breaſt; unleſs the incipient tumour itſelf ſhould cauſe a remora, both to the lymph, and to the chyle, and ſoon after ſuffer the lymph, as the thinner fluid, to ſlip by, and retain the chyle.

Does the pain, then, which is actually ſeated in the meſentery, ſeem to be in the inteſtines, the nerves that go thither being prick'd, juſt as happens in the foot which is already amputated? Is there not a humour in all tumours of the meſentery, which may thus prick the nerves? Or is there a humour in ſome which may blunt the ſenſation of the nerves by relaxing them? Or are the nerves, in conſequence of their being intercepted by the hardneſs of theſe tumours, ſometimes made incapable of the office of ſenſation, juſt as they would be by having a ligature made upon them? But if we ſuppoſe this, you will not be able to conceive afterwards, how it happen'd that Laubius (*q*) remark'd "tormina, about the navel," when "a hard and compact "ſteatomatous abſceſs, which exceeded the ſize of a man's fiſt, was ſeated in "the poſterior part of the meſentery, where it is connected to the lumbar "vertebræ, ſurrounding the larger veſſels of that part."

For, according to this hypotheſis, it ſeems that the nerves lying upon theſe veſſels, and going to the meſentery, and inteſtines, muſt have been intercepted, and compreſs'd. See then that you think of ſome other hypotheſis to add thereto, and conſider of the other explanations, which I juſt now hinted at, and accommodate the other hypotheſis to other obſervations. None of which, or at leaſt none of thoſe that we have attended to, you can ſuppoſe explicable by you, in the manner Bierlingius (*r*) has hinted; as he thought "that through ſo many ages, ſo many authors were deceiv'd;" if not always, yet "many times;" while being ignorant of the real uſe of that large gland in the center of the meſentery, and of the receptaculum chyli, they had, after death, from this which was even then full of chyle when cut aſunder, "generally made an abſceſs of the meſentery:" as if either the abſceſſes which moſt authors have given the relation of, were not deſcrib'd to be full of a fluid quite different from chyle; or as if that large gland was the ſame in the human body, as it is in that of the quadruped ſpecies.

I omit the different ſituation of ſome abſceſſes and tumours, and the number, or the magnitude, of the greater part of them which have been obſerv'd, even in the living body. Nor ſhall I deny what the celebrated Haller (*s*) thinks; I mean that the meſenteric glands, "which are ſometimes very large "indeed, in younger animals (but agreeably to the receiv'd law of nature "in conglobated glands) have been taken for diſeas'd glands, when they "were very ſound." But when there are either many more than this law requires, or they are harder than is natural, there certainly is no room for this ſuſpicion; as, for inſtance, in that diſſection of the boy which I have quoted (*t*) from Benivenius. For he would not have call'd the tumour "a callus;" nor have ſaid that "all" the meſeraic veins were obſtructed thereby, if he had not found a tumour amongſt thoſe veins, which was not only large, but very hard.

However, in regard to the hardneſs, both the different nature, and the different age, is to be conſider'd in theſe tumours. And how often their nature approaches to that of a ſteatoma, you might have obſerv'd from moſt of the obſervations which have been produc'd. And yet it is very different at

(*q*) Act. n. c. tom. 2. obſ. 108.
(*r*) Eph. n. c. dec. 1. a. 2. obſ. 152.
(*s*) Not. 2. ad §. 128. prælect. Boerhaav. inſtit.
(*t*) N. 7.

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different times. See, for inſtance, thoſe medical themes of that excellent anatomiſt Solomon Alberti, which are publiſh'd, together with his three orations, and relate to the diſeaſes of the meſentery, and pancreas. You will find many things therein, by which ſome of the remarks I have made above (*u*) are confirm'd; but the following words in particular: that the humours putrefying in the meſentery, "ſometimes raiſe it up into a tumour, which is "at firſt lax and ſoft; but in proceſs of time, the humours gradually drying "away, becomes ſo hard, and gives ſo much reſiſtance to the touch, that in "the parts about the navel, and the lower part of the belly, you would think "either a bone or a calculus had been form'd." But, on the other hand, it happens, at different times, that thoſe parts which were hard grow ſoft by putrefaction. And to this claſs, among others, belongs that obſervation alſo of Andreas Veſtphalus (*x*), who having found in the belly of a woman, but principally about the navel, "many hard tumours, which at length grew "ſoft again in a courſe of time," ſaw in her body, after death, the meſenteric glands "for the moſt part ulcerated, but ſome ſtill indurated."

Now, however, let us ſee about thoſe tumours that belong to the lower part of the belly.

12. A woman, of forty years of age, began formerly, after the abortion of a fœtus of almoſt five months old, to obſerve a certain hardneſs about the uterus, and to be attack'd with a pricking pain, in the ſame part, which was ſlight indeed, but continual. Sometimes ſhe was feveriſh. The tumour, in the mean while, increas'd outwardly; yet in ſuch a manner as to be moveable: for it was ſometimes perceiv'd in the middle, and ſometimes at the ſides. She had a conſiderable pain in her head: ſhe went to ſtool with great difficulty: a vomiting was at times troubleſome: and the pain in the tumour was, at certain times, ſo excruciating, and particularly when it was increas'd by uneaſineſs of mind, as to excite an ardent fever, and to be almoſt intolerable. Theſe circumſtances which I have mention'd happen'd within ten years: in which time ſhe never conceiv'd. Finally, the tumour being become immoveable, and the pain, and the acute fever, being very violent, ſhe was no longer number'd with the living.

The belly being open'd, a very great bulk of tumour was found by Valſalva, ſo as to be equal to the ſize of a very large human head. This tumour was ſeated in the poſterior paries of the uterus, vehemently compreſſing the inteſtinum rectum, and being cloſely connected to the ſurrounding parts. Externally, indeed, it ſeem'd of a fleſhy colour; but in its ſubſtance it was more firm than fleſh: and within this ſubſtance contain'd two ſinous cavities, the parietes of which reſembled putrid fleſh. One of theſe cavities was empty; but in the other was contain'd a ſerous matter. This tumour alſo occupied the ſeat of the ovaries. For which reaſon no traces of theſe parts remain'd: except that at the ſides of the tumour were ſeen veſicles turgid with ſerum; ſome of which were equal, in their magnitude, to that of a pigeon's egg. Part of the ſerum collected therefrom was put on the fire, and part of it mix'd with acid juices. Yet neither of theſe portions did in the leaſt coagulate.

(*u*) N. 4 & 7.

(*x*) Differt. de parte inteſt. jejuni & cæt. c. 3. §. 60.

13. This caſe needs no explanation: ſo exactly do the appearances, found in the dead body, anſwer to what had been obſerv'd in the living. That is to ſay, the hardneſs coming on after abortion, the pain, the tumour when at length grown manifeſt, the ſeat thereof, and the defect of conception for the ſpace of ten years, though in a flouriſhing time of life, ſufficiently argued a tumour of the uterus: nor did the pain of the head, the vomitings, and the violent increaſe of pain in the tumid part, and particularly from the mind being diſagreeably affected, argue differently from the preceding ſymptoms: but the ſeverity of the tortures, and the fevers, demonſtrated the malignant nature of the tumour; as the difficulty of going to ſtool, rather than making water, did alſo demonſtrate to which part of the uterus it chiefly adher'd.

There was one thing, which, if you attend to Arantius (*y*), may not ſeem to be very compatible therewith. For this author, in ſpeaking of the marks whereby we may diſtinguiſh tumours of the uterus from thoſe of the meſentery, ſays, that thoſe of the uterus "are painful, equal, endow'd with an "oval form; and are not entirely mov'd from their places." Yet the tumour in our caſe was moveable for a long time; and would, perhaps, have continued ſo for a very long time, nay perhaps always, if it had not at length fix'd itſelf to the neighbouring parts very cloſely. Had Arantius, therefore, lit only on ſuch tumours of the uterus, that were already become very large, and connected to the parts about? Or has he made uſe of words, which ſeem to ſignify that theſe tumours are more immoveable than he meant to aſſert? Be this as it will, it was much more eaſy in the preceding hiſtory, than in that which follows next, to conceive, before diſſection, in what part the tumour of the lower belly conſiſted: nor did this eſcape the ſagacity of Valſalva, as you will immediately learn.

14. A ſlender woman, of about forty years of age, being much ſubject to the hyſterical paſſion, and particularly to violent paroxyſms thereof, which ſhook her whole body, but principally the viſcera of the belly, with convulſive motions; and having, at length, undergone ſome that were more violent than the reſt, began to obſerve a manifeſt kind of depreſſion in the epigaſtric region, and a manifeſt fulneſs in the hypogaſtric region. The former was never chang'd; but the latter frequently within the ſpace of one day. For although it ſhow'd a pretty large and very hard tumour, yet this very often ſubſided of a ſudden. In like manner, when aliment was taken in, the woman perceiv'd it to be carried down quite to this tumour; that part being from thence more elevated: and the ſenſe of weight, which was always in that place, became more burdenſome: and four or five hours after, very ſevere pains, tormina, and ſwoonings, were brought on. The patient often complain'd that all her entrails; for this was her very expreſſion; were fallen down from their ſituations. Her digeſtion was manifeſtly deprav'd: ſhe was feveriſh: and very much emaciated. Having liv'd in the manner I have deſcrib'd for three months, ſhe died.

In the carcaſe was found what Valſalva had predicted in his opinion; that is, the ſtomach fallen down to the hypogaſtrium; ſo that ſcarcely four fingers breadth lay betwixt this viſcus and the pubes. But it had a different poſition

(*y*) C. 44. ſupra ad n. 7. cit.

from that, which the editors of the *Bibliotheca Anatomica* (*z*) have repreſented, from a certain virgin. For the part of the ſtomach which correſponds to the gula, was here extended, in length, to ſuch a degree, that the whole of the fundus lay in the hypogaſtrium.

15. This diagnoſis of Valſalva was indeed very extraordinary, and the obſervation no leſs rare. To begin with the latter; I would have you obſerve that the ſtate of the ſtomach, in the hypogaſtrium, may be very different. For ſometimes it is ſo very large, that in a woman whom I diſſected, in the hoſpital, about the middle of December in the year 1717, I ſaw the fundus of the ſtomach to be no farther diſtant from the os pubis, than in the woman in queſtion; and demonſtrated it to thoſe who were preſent: to whom it ſeem'd ſo much the more ſurprizing, on account of its being empty. For that it may deſcend ſo far when it is immoderately diſtended, either with flatus, or included humours, that women may be ſuppos'd to be far advanc'd in their pregnancy, or to labour under an aſcites, is known from the obſervations of Moinichenius (*a*) in particular, and Jodonius (*b*); the latter of whom ſaw the ſtomach, "when cut through the middle, to be longer than a "Pariſian ell;" and the former, in this very theatre of our college, ſaw "the "whole abdominal region occupied, and the inteſtines cover'd, therewith." And to what a degree the celebrated Widmannus (*c*) found it extended, in a man who us'd to fill himſelf every day with an almoſt incredible quantity of bread, and beer, the deſcription of it ſhows.

But the ſtomach ſometimes occupies the hypogaſtrium alſo with ſome part of its bulk, as it does other regions of the belly; not on account of its magnitude being increas'd; but, having its uſual and proper ſize, either at one extremity, for inſtance the right, as in the example already refer'd to (*d*) in the *Bibliotheca Anatomica*; to which you may add another of Mery (*e*); or in the whole of it, falls downwards. And it may fall down to the lower parts of the belly, either in conſequence of being drag'd downwards, or forc'd from above.

In the patient of Veſalius (*f*), it was drawn "downwards from its ſitua-"tion, in ſuch a manner," that the very function of the ſtomach was deficient; and a ſingultus coming on, death was the conſequence thereof. It has alſo been drawn down, by almoſt all the inteſtines having fallen into the ſcrotum; as in that obſervation of Mery; or into a very long ſac, as in another obſervation made by the celebrated Henry Papen (*g*). And it has been driven downwards in other bodies diſſected by Valſalva (*h*), or by me (*i*), by the diaphragm forcing it from above; or being depreſs'd: or by the liver being greatly increas'd in its ſize; of which laſt kind, in particular, are two obſervations of Fantonus the father (*k*): and I take notice of all theſe examples here, that I may, in general, point out the cauſes of the depreſſion; and not becauſe the ſtomach was really thruſt down quite into the hypogaſtrium.

(*z*) Part. 1. ad Gliſſon. tract. de ventric. & inteſt. c. 2.
(*a*) (*b*) Sepulchr. ſect. hac. 21. obſ. 42. & 48.
(*c*) Act. n. c. tom. 6. obſ. 149.
(*d*) N. 14. in fin.
(*e*) Mem. de l'Acad. R. des ſc. a. 1701. obſ. 5.
(*f*) De corp. hum. fabr. l. 5. c. 4.
(*g*) Epiſt. de hern. dorſal.
(*h*) Epiſt. 17. n. 25.
(*i*) Ep. 21. n. 24.
(*k*) Obſ. med. anat. 5. & 24.

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In the hypogaſtrium, however, it was ſeen by Ruyſch (*l*), when he diſſected the body of a woman who had died of an aſthma. But neither is the cauſe ſhown, why "this viſcus, together with the inteſtines, left its natural "ſituation, and occupied the hypogaſtrium;" nor what inconveniences had been the conſequences of this unuſual ſituation, in the living body: for which reaſons I purpoſely omit other obſervations of its deſcent; eſpecially when in a leſs degree. But thoſe things which have been lately obſerv'd by that celebrated man Molinelli (*m*), related rather, as I ſuppoſe, to another diſorder that was join'd therewith; I mean to a very large and hard tumour intirely ſhutting up the beginning of the inteſtinum duodenum; from whence, not only the very difficult and long-continued vomiting of all the ingeſta, the very great waſting, and the icteric colour, may be accounted for, but alſo that "very great magnitude of the ſtomach, which deſcended quite "to the region of the pubes, and occupied almoſt the whole hypoga-"ſtrium;" as the preternatural increaſe of length in the œſophagus, and, conſequently, the *prolapſus ventriculi*, may be likewiſe. For as the annex'd pylorus was more depreſs'd, on account of the weight of that tumour, ſo by reaſon of the paſſage, from thence to the inteſtines, being ſhut up, the the ſeveral ingeſta had not only enlarg'd the ſtomach, by being confin'd there for a long time; but, finally, by frequently irritating them, and by forcing them into violent contractions, which the very difficult vomiting was a proof of, had drawn down the œſophagus, that is connected with the other orifice, and made it longer: ſo that in this caſe a prolapſus of the ſtomach was added to its increaſe of ſize: and that not from cauſes which forc'd it downwards from above, but drew it downwards from below.

Now if the obſervation of Valſalva be compar'd with all theſe, it will appear of how extraordinary a nature it is.

16. Valſalva then did not find a part of the ſtomach (either on account of its magnitude being increas'd, or of the ſituation of one extremity being chang'd) but the whole fundus, in the hypogaſtrium, and not in the umbilical region. The convulſions of the viſcera, that are contain'd in the belly, had drawn this viſcus down in ſo violent a degree, by extenuating that part which is continued into the gula, and by this means rendering it longer. For although Molinelli (*n*) ſaw the gula itſelf become longer; and Fantonus the father, in the firſt of the two obſervations (*o*) which I have ſpoken of, has remark'd that frequent complaints were made by the patient, of the tongue ſeeming to be drawn back towards its baſis; which was no inconſiderable argument, as the very learned ſon has interpreted it (*p*), of the œſophagus being drawn, and extended downwards; (nor, indeed, is it to be denied that ſome part of the great length which Valſalva ſaw, was a conſequence of the œſophagus being carried downwards) yet as he himſelf has acknowledg'd, that it was the ſtomach chiefly which was diſtended, it does not become me to deny, that the length is chiefly to be attributed thereto.

And if the obſervation of Valſalva were not very ſingular, among others,

(*l*) Obſ. anat. chir. 56.
(*m*) Comment. de Bonon. ſc. acad. tom. 2. p. 1. in medic.
(*n*) N. 15. in fin.
(*o*) Obſ. 5.
(*p*) Schol. ad eand. obſ.

on account of theſe peculiarities which I juſt now obſerv'd, it certainly would be ſo, on account of this difference; I mean, that although in the other obſervations, ſome of the remaining parts of the belly were much affected with diſeaſe, at the ſame time, as the omentum, the liver, one of the kidnies, the pancreas, the duodenum, or ſome other inteſtine; and not to omit other injuries of the ſtomach itſelf, either the pylorus almoſt obſtructed, or all the parietes greatly relax'd; in the obſervation of Valſalva was nothing of this kind: but taking away that production of the upper part of the ſtomach, whatever diſorder there was, conſiſted in the prolapſus of this viſcus: ſo that it ſeems to have been made in order to learn the peculiar ſigns of this diſorder; which are in fact ſo expreſs and clear therein, that the difficulty, which I have aſſerted to be greater in diſtinguiſhing this tumour, than that of the uterus, (*q*), is not to be eſtimated from the obſcure ſignification of the ſigns, but from the rareneſs of the diſorder refer'd to.

However, even the rareneſs of the diſeaſe, itſelf, is not ſufficient to baffle the ſagacity of thoſe who know how to inquire ſkilfully into the ſymptoms, and conſider them duly; that is to ſay, in other words, the ſagacity of a man "practis'd in diſſections," as Valſalva was, "and in finding out the "operations and uſes," of the internal parts: which two circumſtances Galen (*r*) abſolutely inſiſted upon as indiſpenſable, in thoſe phyſicians who "deſir'd to obtain the capacity of diſtinguiſhing diſeaſes of this kind from "one another;" after having ſhown in what manner he himſelf had found out the ſtomach of a certain man to be ſmall and round; and the bladder of another to be ſmall and prominent; and other things which were ſtill more obſcure than theſe.

17. The ſame author had taught, a little before (*s*), "that all things "which are within the body cannot be certainly known;" and (*t*) that thoſe which do not fall under the notice of the ſenſes, "we muſt endeavour to at-"tain to by the moſt artful conjecture, if not by the moſt certain ſcience:" and having ſaid all theſe things that I have related, of thoſe internal conſtitutions that are deriv'd from nature; he has preſently after ſhown (*u*) that ſuch ſtates of theſe parts, as are the effects of diſeaſe, are to be diſtinguiſh'd "from their operations being injur'd, or deprav'd; or from the various ex-"cretions; or from pains, or preternatural tumours; or from ſome or all of theſe united." And learnedly, as it became ſo great a maſter, has he, in this manner, ſhown us the ſeats, and, as it were, the ſources of diſeaſes.

But there is often ſuch a complication of diſorders, ſuch a conſent and vicinity of parts, that this "moſt certain ſcience," of which he ſpeaks, is rarely to be expected: more generally "an artful conjecture" muſt be attempted, and modeſtly and diffidently propos'd. And as I have been wont to do this upon other occaſions, ſo I thought it behov'd me to do it in ſome caſes, which are not very commonly known; and which will be in the number of thoſe that I ſhall now ſubjoin, in ſuch an order, that if they do not correſpond with thoſe which I have given you from Valſalva, in the nature and ſeat of the tumours, they may, at leaſt, correſpond with them in the tumours hav-

(*q*) N. 13. in fin.
(*r*) Art. med. c. 74.
(*s*) C. 71.
(*t*) C. 72.
(*u*) C. 75.

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ing occupied the middle, or lower region of the belly: although that tumour, with which I ſhall begin, was in part fix'd to a higher ſituation, and did not much differ in its nature from one of thoſe (*x*) that are deſcrib'd above, if we do but allow of an aneuriſm in that obſervation, and this of mine; in the former of which, by reaſon of the brevity in the hiſtory of the ſymptoms, and in the latter, by reaſon of no diſſection having follow'd, we cannot affirm the thing for a certainty.

18. A chaſte and pious virgin, of four and forty years of age, who had as yet had a plentiful and regular evacuation of blood from the uterus every month, having this diſcharge entirely obſtructed for one or two months, began to complain of an itching of the eye brows and eyes, and of palpitations of the heart, as ſhe herſelf ſaid; which were ſhort indeed, but frequently recur'd. Theſe palpitations being grown more violent of a ſudden, and continual, I was call'd in. The patient, then, in order to point out the ſeat of the diſorder to me, did not lay her hand upon her breaſt, but upon the epigaſtrium. Laying my hand upon this part, I perceiv'd a certain hard and large body to be vibrating, and ſtriking the hand with a great impetus. You would have ſaid that there was a large aneuriſmal tumour beneath the hand, which every now and then doubled its pulſations, and occupied no ſmall ſpace in the middle of the upper and neighbouring regions of the belly. And in this light it appear'd to others.

My opinion, indeed, agreed with theirs in this; that theſe pulſations had no relation to the heart: inaſmuch as there was no vibration in the breaſt, and the pulſe, when felt in both wriſts, ſhow'd nothing different from the natural ſtate, except that it was a little more frequent. But in regard to the aneuriſm, I could not aſſent to their opinion; not only for other reaſons, but, particularly, becauſe the times of theſe pulſations did not at all agree with the times of the pulſes in the wriſts. For their intervals were very unequal, as their force was alſo; as ſometimes the hand was ſtricken with a very ſtrong, and, at other times, with a leſs ſtrong impetus; when, at the ſame time, not the leaſt change was obſerv'd in the pulſe at the wriſts.

Yet it was much more eaſy to ſay, what this tumour did not ſeem to be, than what it did ſeem to be; being large and hard, as I have ſaid before, and comprehended in the circumference of a circle, as if it were raiſing itſelf up, every now and then, from the vertebræ of the loins, to ſtrike againſt the hand; but immediately withdrawing itſelf in ſuch a manner, that, even in a ſlender virgin, it was not eaſy to find out whither it had receded, till it again rais'd itſelf up, and ſtruck againſt the hand. And although it came readily to my mind, that a globular kind of tumours are frequently perceiv'd in the bellies of hyſterical women, which aſcending upwards from the lower part, are very troubleſome to them; yet, on the other hand, it was equally obvious, that theſe tumours are not attended with pulſations of this kind, ſo as to reſemble aneuriſms.

Nevertheleſs, conſidering this, and other things that might be ſaid againſt it, and weighing them in my mind; and, at the ſame time, attending to thoſe things of an extraordinary nature, which are often met with in women, contrary to expectation; I found myſelf inclin'd to conjecture that

(*x*) N. 9.

whatever

whatever this diſorder was, it might certainly be refer'd to the claſs of convulſive and hyſteric affections.

Yet this conjecture of mine I did but juſt hint; and omitting all controverſy; as my cuſtom is, at the bed-ſide of patients, when we agree, in other reſpects, as to the remedy; I immediately aſſented to her loſing blood, as the evident foregoing cauſe requir'd. Which being done, the patient immediately began to be ſo much better, that on the day following no palpitation any longer remain'd. And ſhe, certainly, did not complain of it again; at leaſt for the four or five months that I remain'd in the place of my nativity; till, in the year 1711, I came here to take upon me the profeſſorſhip of medicine. But by what diſorder ſhe was carried off, for ſhe died ſome years after, I could not learn for a certainty, as I was then here, and her body was not diſſected.

19. The arteries which, if they are dilated into an aneuriſm, may produce a very great pulſation in that part of the belly which is pointed out, in the hiſtory in queſtion, are the cœliaca with the largeſt of its branches, the meſenterica ſuperior, the right emulgent, and the great artery: but the latter of theſe much the moſt frequently of them all; and the others very rarely, if you except the cœliac. For to the cauſes which are common to the others; as, for inſtance, eroſion, conſtriction, and thoſe of a ſimilar kind, you will, moreover, add, with me, this which is peculiar to the cœliac, when you attend to thoſe frequent tortuous flexures; whereby, as the courſe of the blood to the ſpleen is retarded in the ſplenic branch of that artery; ſo a great part of the blood, and the impetus of it, is reflected into the branches which ariſe therefrom, before theſe obſtacles are come to; ſo that if any of thoſe cauſes be added, which continues to act very violently, and for a long time together, an aneuriſm may be eaſily produc'd.

But although there are ſo many arteries in that part, and more than one cauſe whereby they may be dilated, there are alſo many things which ought to render us cautious, leſt we, at any time, heedleſly take a pulſation for the mark of an aneuriſm being already begun. The firſt is great leanneſs and thinneſs of body, as we even gather from what Berengarius (*y*) formerly admoniſh'd us of, in order to refute a miſtaken opinion to the contrary, of certain phyſicians, in the caſe of an emaciated woman. His admonition is as follows; "by means of the great artery, a great pulſation is frequently "perceiv'd in the region of the ſtomach, and inteſtines, and eſpecially in ex-"tenuated bodies."

Nor did Proſper Martianus (*z*) heſitate to explain from this cauſe, even that very great pulſation which is ſaid to have been juſt in the very ſame ſituation in the ſon of Eratolaus, in the ſeventh book of Epidemics (*a*), that it was in the virgin I am ſpeaking of; the words run thus: "in the middle "ſituation betwixt the navel, and the os pectoris, was perceiv'd, by apply-"ing the hand to this region, ſuch a palpitation as could not be generated "about the heart, either by running, or by fear." Yet this, according to the opinion of Martianus, "was nothing elſe but the motion of the great

(*y*) Comment. 9. ſuper anat. Mundini.
(*z*) Adnot. ad verſ. 55. ſect. 2. coacar. præ-not.
(*a*) N. 3.

" artery, which is in others obſcur'd, and ſtifled, by the fleſh that lies be-
" twixt this veſſel, and the hand;" for in that patient, in conſequence of his being waſted away to the greateſt degree conceivable, the thickneſs of theſe parts, interpos'd betwixt the artery, and the hand, was ſo diminiſh'd, that the artery " might not only be more eaſily elevated, but more eaſily
" perceiv'd: and although this is common to all the arteries, of the body;
" yet it is, nevertheleſs, obſerv'd moſt frequently," ſays he, " in the middle
" ſituation betwixt the navel, and the os pectoris;" the reaſon of which is, that there is no other part where a very large trunk of an artery is ſubjected to the hand, without the interpoſition of any bone: and that in the ſame place, other arteries, which I have juſt now taken notice of, exert their pulſations.

The ſecond circumſtance, whereby phyſicians may be deceiv'd from pulſation, is very complicated: but, by the ſame author Martianus *(b)*, is reduc'd to the ſingle article of plenitude; whether this be in the arteries, or in the veins, or in the fleſh; which lying upon the arteries, and "compreſſing" them, cauſe their parietes to be elevated " with a greater impetus;" inſtances of which he produces in great inflammations, and thoſe tumours that tend to ſuppuration. Yet Valleſius *(c)* had led the way to this doctrine, in the narration of the hiſtory of that patient, of whom I ſpoke juſt now. " A re-
" markable pulſation happens in many patients," ſays he, " in that part of
" the belly, from the artery which goes down upon the ſpine, by reaſon of
" an inflammatory affection of that part; which pulſation ſometimes happens
" in acute diſeaſes alſo; . . . . . and ſometimes even remains after acute diſ-
" eaſes . . . . . and a cancerous affection happens in that place."

But that even where any hard body preſſes upon the arteries, their pulſation is perceiv'd, he had aſſerted above *(d)*, when he explain'd that " pulſation and
" weight," which were obſerv'd in the belly of the wife of Gorgias (who had labour'd under a ſuppreſſion of the menſes much longer than our virgin)
" which way ſoever ſhe was turn'd." For the uterus, ſays he, " being in-
" durated, is carried, like a foreign weight, to which-ever ſide the body is
" turn'd to; and the arteries which are compreſs'd, endeavouring to free
" themſelves from that compreſſion, are perceiv'd to pulſate." In conſequence of which doctrine phyſicians have ſince obſerv'd, as you even ſee in the Sepulchretum *(e)*, that the cœliac artery, or the aorta, being compreſs'd by a very great obſtruction and turgeſcency of the pancreas, or the meſenteric glands, a violent pulſation is perceiv'd, as often happens in hypochondriac patients, or others.

20. If you transfer theſe conſiderations, and others analagous thereto, to the virgin of whom I have ſpoken, you will learn, in the firſt place, that the pulſation deſcrib'd in her was not owing to an emaciated ſtate; for though her body was ſlender it was not extenuated. In the ſecond place, although there was ſome plenitude, from the retention of the menſtruous blood, yet that it was not only from thence, for it was not in that place: nor yet from inflammation, nor a tumour which verg'd to ſuppuration; nor, in fine, from

(*b*) Annot. modo cit.
(*c*) Comment. in l. 7. epidem. n. 4.
(*d*) In l. 5. n. 11.
(*e*) L. 1. ſ. 9. in ſchol. ad obſ. 38.

any

any conſiderable obſtruction of the pancreas, or the meſenteric glands; as of all theſe diſeaſes there were not the leaſt ſigns. It remains, therefore, that, as theſe and other ſimilar cauſes of compreſſion were abſent, the pulſation was either from ſome different cauſe, or from an aneuriſm.

What gave colour to the ſuppoſition of an aneuriſm at firſt ſight, was the great bulk of body which ſtruck againſt the hand. And if, as Albertini *(f)* has aſſerted, he "has many times demonſtrated, from his not perceiving "the diameter of the veſſel to be increas'd, that the ſtrong and continual "pulſations of the cœliac artery, or of the aorta, in the abdomen, were "without dilatation; nor was the opinion invalidated by the event;" here, on the contrary, a dilatation did not ſeem to be wanting, ſince the pulſating body was perceiv'd to have ſo great a diameter.

However, it muſt be confeſs'd that it is not equally eaſy to avoid being deceiv'd, ſometimes, in this ſecond judgment; that is to ſay, when a body of ſome extent, which ſtrikes againſt the hand, may either be a dilated artery, or a tumour lying upon an artery which is not dilated.

For if the artery is pretty large, and is compell'd, by the compreſſing tumour, to pulſate very vehemently, it will lift up the tumour with it; which we ſuppoſe to be not too heavy; and will force it againſt the hand of the phyſician. This circumſtance, which every body ſees ſo plainly, that nobody can deny it, happening ſometimes even in the external parts, holds ſurgeons in ſuſpence whether the diſorder be an aneuriſm or not; as it did here in the neck of a certain girl, who had a tumour ſo contiguous to the left carotid artery, that it not only caus'd ſtronger pulſations of this artery, which it compreſs'd, but even pulſated therewith. Yet the whole tumour, as a more accurate examination, and a perfect cure demonſtrated, conſiſted in one of the jugular glands being tumid, and already fill'd with pus internally.

So alſo, on account of the pulſation which was perceiv'd under a bronchocele, many had ſuppos'd that tumour to be an aneuriſm, which Severinus *(g)* (as he believ'd it to pulſate, on account of its compreſſing the carotid arteries) ſays he had, by diſſecting it after death, demonſtrated to be actually of ſuch a nature as his opinion had predicted. And if we are in danger of falling into an error even externally, how much more danger muſt there be of being deceiv'd, in thoſe parts which lie deep among the viſcera? See, with what ingenuouſneſs, never ſufficiently to be commended, thoſe celebrated men Jo. Phil. Burggrafius *(h)*, and Peter Tabarranus *(i)*, have deliver'd down to poſterity what happen'd to them. The former, in a caſe wherein a pulſation was obſerv'd from the navel, quite to the ſcrobiculus cordis; and that to ſo great a degree, as to be frequently heard by thoſe who ſtood near; and which had continued for four and thirty years; ſuſpecting it not to be from a true dilatation of the large artery in the meſentery, as the diameter thereof was not much enlarg'd; but that it might be from a ſpurious aneuriſm, as Lanciſi call'd them; and ſuppoſing it to be incurable, by reaſon of having continu'd ſo long, ſaw the pulſation, contrary to all expectation, remov'd

(f) Comment. de Bonon. ſc. acad. tom. 1. in opuſc.

(g) De recond. abſceſſ. nat. l. 4. c. 6.

(h) Act. n. c. tom. 6. obſ. 131.

(i) Obſ. anat. edit. 2. n. ix.

within a little time, by giving ſome remedies, in the mean while, which might, at leaſt, ſerve to correct the crudity of the humours; and this after a great number of remedies had been made uſe of by others, to no purpoſe.

But Tabarranus, having found not only a pulſation under the epigaſtric region, but alſo a tumour of the bigneſs of a fiſt, and thoſe join'd with the other marks of a true aneuriſm, was ſurpriz'd, afterwards, to find, inſtead of an aneuriſm, only a ſcirrhous tumour in the center of the meſentery, adhering ſo cloſely to the large veſſels, that it could not avoid compreſſing the aorta, and being rais'd up by the pulſations thereof. Theſe obſervations may be of ſervice to you; to me, at the time when I had the caſe of this virgin before me, they could be of none, not only becauſe they were publiſh'd ſo many years after; but, alſo, becauſe the pulſations, in both of the obſervations, were made exactly at the ſame time that they were made in the reſt of the arteries. Being induc'd therefore, by other doubts which I hinted at juſt now, to inquire into the remaining circumſtances, I concluded that ſo large an aneuriſm, as this muſt have been, could not be form'd in ſo ſhort a time, and without more violent ſymptoms preceding or following it; and that the pulſations of an aneuriſm could not but correſpond with the motion of the arteries.

I therefore rather ſuppos'd the tumour to be of ſome other kind. That is to ſay, as I have hinted briefly above, I ſuppos'd it to be the effect of internal hyſterical convulſions; which conſtringing ſome of the inteſtines here and there, and the meſenteric branches of the aorta, at unequal intervals of time, with a very conſiderable force, form'd, from thoſe inteſtines, a kind of globe, as it were; which was diſtended with a confin'd and rarefy'd air; and, at the ſame time, compell'd the aorta to pulſate more vehemently, every now and then (inaſmuch as the efflux of the blood from thence, into the meſenteric branches, was prevented) and impel the globe which lay upon it. But as I had it not in my power, as I have ſaid before, to demonſtrate that no dilatation of the arteries was conceal'd beneath that tumour, by diſſection of the body, I will go on to another tumour which was plac'd in the ſame ſituation, and this a permanent one too, and examin'd by diſſection. And as this was one of the very rare tumours; as the patient was a perſon of ſo much conſequence; and as the caſe gave occaſion to ſuch controverſies of opinion, that the hiſtory thereof cannot, nor indeed ought to be, comprehended in a few words; you will not be ſurpriz'd if I give it you more at large than I generally do others, and in an accurate and diſtinct manner.

21. Fortunato Mauroceni, whom the love of a religious life had drawn away from his illuſtrious employments in the republic of Venice; and from his very noble family (for he was nephew, by the father's ſide, of the Duke Franceſco, who took his ſurname from the conqueſt of the Morea) into the venerable family of the Caſinian monks, and whoſe merits had remov'd him from thence to the biſhopric of Treviſo; and after that to the biſhopric of Breſcia; having from the very time he took upon him this new courſe of life, come out very ſeldom in public, and us'd himſelf quite to a ſedentary life, as he was generally employ'd in the reading of ſacred books; became, by degrees, ſubject to the hypocondriacal affection, and a flux of blood from the hæmorrhoidal

hoidal veins: yet, while this diſcharge was in a proper proportion, he enjoy'd a ſtate of health, which was even more flouriſhing than he wiſh'd: that is to ſay, a very fat habit of body, and particularly a fat belly; till, at length, as he grew in years, the hæmorrhoidal flux at firſt began to be diminiſh'd; and after that to be entirely obſtructed.

For when this diſcharge was diminiſh'd, he was troubled with certain pains of the belly, which he ſuppos'd to be from flatus; and were frequently ſudden and momentary; but ſometimes of pretty long continuance. And when he had now completed his ſixtieth year, and no more blood was diſcharg'd by the hæmorrhoids, theſe pains began to be more troubleſome, particularly in the autumn of the year 1726, which was the laſt he ſaw; at which time he alſo labour'd under frequent fevers. Of theſe he got rid by means of the Peruvian bark; and the pains were alleviated by the opportune return of the hæmorrhoidal flux. In the following winter, having his fever and pain return a ſecond, and even a third time, he was always reliev'd by the ſame flux coming on again; but never perfectly cur'd: and, indeed, at this time a certain hardneſs firſt began to be perceiv'd in the belly, and a tumour.

On account of theſe diſorders he came from Breſcia to Padua in the following ſpring. With the other diſagreeable circumſtances was join'd a coſtiveneſs. To counteract this inconvenience, in as mild a manner as poſſible, a ſenior phyſician preſcrib'd rhubarb to be chew'd now and then, mix'd with currants, from which the patient ſeem'd to be a little better: but ſome ſtronger purgatives being added, by another ſenior phyſician, he was much worſe; as he was alſo by other things which were given him to procure ſtools; the patient being averſe to glyſters.

But even whatever remedy was given him, with a view to obviate other ſymptoms, he ſcarcely had taken it more than once or twice, but he threw it up again; that is to ſay, in conſequence of its not being born on the ſtomach; which, in the mean while, being now frequently troubled with the moſt obſtinate vomitings, that yielded to no kind of remedy, threw up, very ſoon, the food and the drink, that it took in; or if it did retain any part of them for a conſiderable time, brought it up at length, nevertheleſs, without its having undergone any change; as was the caſe with a boil'd apple which he had retain'd for eight and forty hours.

Beſides his food, he alſo brought up a great quantity of water, ſo as even to exceed the quantity of what was taken in; but this water had neither taſte, nor colour: nor during the whole courſe of theſe vomitings, which were ſo frequent, was any thing ever perceiv'd to be either bitter, or colour'd, if you except the food. As theſe things, and others, but particularly the tumour, (which I ſhall ſpeak of preſently) terrified the phyſicians, that very eminent man Michael Mauroceni the brother of the biſhop, knight, and very illuſtrious ſenator, came hither from Venice, and order'd three other phyſicians, in the number of whom I was, to be ſent for, in order to examine the patient, and conſult with his phyſicians upon the caſe.

We found him confin'd to his bed, as he had been for ſome days, extenuated in his face and limbs, his fleſh being warm like that of a healthy perſon; but his pulſe rather more frequent: which two circumſtances we were aſſur'd by his phyſicians had always been ſo; except that the frequency of the pulſe

was ſomewhat increas'd towards the evening, and in the night. It was particularly begg'd of us that we would examine the tumour with accuracy. This was, as far as we could judge from feeling it, and even from ſeeing it; for it was obvious to the eye alſo, nearly in the circumference of a circle, the diameter of which was eight inches in extent, being plac'd in the midway betwixt the cartilago enſiformis, and the navel; in ſuch a manner as to be diſtant from both of them by ſome little ſpace (ſuch was the prominence of his belly by reaſon of fatneſs) riſing up from the circumference of it gently towards the middle; and having the ſkin, wherewith it was cover'd, juſt of the ſame colour that it was of in other places.

If you handled it, you perceiv'd it to be an unequally tuberous tumour in its whole ſurface, and even in the very circumference of it, juſt as if it had been made up of glandular bodies; which ſeem'd alſo to be confirm'd by the reſiſtance it gave when you preſs'd it. When it was preſs'd upon, and, in like manner, when the patient was troubled with flatus, a ſenſe of pain, but not very violent, aroſe in the tumour: beſides which accident, there was no complaint of it, except of a fix'd, but ſlight, uneaſineſs, as if from any little impediment. By laying hold of the tumour with both hands, I eaſily drew it to one ſide or other. That it did not occupy the parietes of the belly it was eaſy to ſee; and, at the ſame time, that it was, nevertheleſs, very near thereto.

When I examin'd accurately with my hand what was above, below, and at the ſides of, the tumour, except that I did not go on to examine below the navel, (the phyſicians, and the patient, aſſerting that nothing preternatural was there) nothing hard or reſiſting was perceiv'd; as far as the fat of the belly, which lay between, would ſuffer me to diſtinguiſh; nothing unequal, nothing which created any uneaſineſs upon being preſs'd. Having made theſe enquiries, and examin'd the urine, in which was nothing at all to be found fault with, and the water that was, as I have ſaid, thrown up by vomiting, and made every other inquiry, or examination, we thought neceſſary, we retir'd, in order to compare our opinions with each other, before that very illuſtrious ſenator, and a great number of other perſons, who were eminent either for their dignity, or their learning, as well as thoſe who were ſtudents in medicine; the phyſicians, and even the prelate himſelf, having heard what I have already related to you.

22. When we were withdrawn from the patient, one of the phyſicians, under whoſe care he had been, gave us a long diſſertation upon the nature and ſeat of the tumour, the ſum of which was this; that he believ'd the tumour to be ſcirrhous; but a ſpurious one, becauſe it was painful when compreſs'd: and that it had its ſeat in the omentum, becauſe it was moveable and external; or perhaps in the meſentery, if any one ſhould chooſe rather to ſuppoſe thus; for that this was moveable, and furniſh'd with that large gland which is call'd the pancreas aſellii, the tumour of which might grow outwards in ſuch a degree, as to come to the anterior parts of the belly, as he ſaid he had ſeen in a certain carcaſe (as if that pancreas either were found in the human ſubject, or as if it were poſſible to draw the whole tumour of a gland, plac'd in the immoveable center of the meſentery, as this pancreas is, to one or the other ſide, with the hand): as to the obſtinate vomitings, it ſeem'd to him that there was ſome excreſcence in the ring of the pylorus, which prevented the aliments paſſing through it; and that theſe, when retain'd, irritated the

the ſtomach; or at leaſt that the cauſe of this vomiting was, certainly, not beyond the ring of the pylorus, becauſe there never appear'd any mark of bile in the matter that was diſcharg'd.

He, therefore, aſſerted that, by reaſon of the vomitings, the moſt extreme waſting of body, and a ſlow lingring death, could not be avoided in the end; but that on account of the tumour it might happen to be ſpeedy, in conſequence of a purulent matter, together with blood, being effus'd from thence into the cavity of the belly. However, if any thing ſtill remain'd for a phyſician to do, that this ought to be attempted by internal medicines, and not by external applications. For as to letting blood from the hæmorrhoidal veins before the ſtrength was broken down, that the patient had refus'd to comply therewith when he had deſir'd it; and that now, in this ſtate of weakneſs, there was no more room to think of it. That the patient had rejected every thing which had been previouſly applied to the tumour, not only as uſeleſs, but as heavy, and troubleſome: wherefore avoiding every thing that might have the power of promoting ſuppuration, the *Ceratum Noribergenſe* was thought by him to be the moſt convenient application; but that we ought to depend entirely upon internal applications; that is to ſay, upon ſuch as were ſtrongly attenuating and diſſolvent; ſuch as would open the belly more than rhubarb; and ſtill more, ſuch as increas'd the quantity of the urine.

In order to produce theſe effects, having recommended a great number of remedies, and thoſe of the more powerful kind, as his cuſtom was; he alſo ſaid that mercurials and chalybeates ſeem'd to him proper for the purpoſe, if they could be born by the patient, and were not diſapprov'd by us, to whom he propos'd them.

After he had finiſh'd ſpeaking, the phyſician, who had attended with him, ſaid a few words on the ſubject, paſſing by other circumſtances of the caſe, and only adding that he believ'd the liver and ſpleen to be obſtructed beſides; but in regard to the medicines, he differ'd far from the other; ſaying that he could not, in his conſcience, propoſe any thing but rhubarb as a purgative; as this was the only one which he had before made uſe of without any inconvenience: whereas he had ſeen all the others which were added have the moſt diſagreeable effects; not only by creating conſiderable uneaſineſſes for the preſent; but by injuring the health of the patient. Then one of thoſe who had come with me, having ſpoken ſomewhat more at large upon the nature of the tumour, and its ſeat in the omentum, and upon the excreſcence in the ring of the pylorus; which the former had ſpoken of and threaten'd; particularly approv'd of this opinion: but in regard to remedies, he differ'd from both of them. For he rejected every thing that is call'd purgative, and even rhubarb itſelf: but propos'd a decoction of the woods, as it is call'd, with a ſmall portion of the viper; unleſs this ſhould ſeem to be too heating, on account of any feveriſh diſpoſition.

23. I, however, altho' I ſaid that there were four things which ought to be chiefly attended to by us, the tumour, vomiting, waſting of fleſh, and fever; nevertheleſs commended thoſe who had ſpoken before me, for having had a particular regard to the tumour, which, as it had been antecedent to the other diſorders, might alſo ſeem to be the cauſe of them. I likewiſe ſaid that the cauſe of the tumour might, certainly, be ſuppos'd to conſiſt in the leſs quick

motion of the blood thro' the vena portarum; which the patient's ſedentary ſtate of life, the hypochondriacal affection, and the flux of blood by the hæmorrhoids; that was of uſe at the time of its flowing, or returning, but hurtful when it decreas'd, or quite fell away; pretty clearly prov'd.

From this retarded motion therefore, that irritations, criſpatures, and pains had ariſen; and, finally, the beginning of a tumour, in ſome one of theſe parts, from whence the returning blood is to be receiv'd, into that vein. That there were other parts which tranſmitted their blood to the vena portarum, beſides the omentum, and meſentery, but particularly the inteſtines; which were, in fact, more near to the hands of any perſon who touch'd the abdomen, than the meſentery itſelf; and not leſs moveable to one ſide and the other, than the parts of the meſentery annex'd thereto; and even much more ſo than thoſe, in particular, that are neareſt to its center.

To this, I ſaid, we may might add that, on ſuch a ſuppoſition, we could more eaſily account for, not only the long coſtiveneſs of the bowels, but perhaps, even the vomiting, which had ſo frequently been brought on. For that thoſe ſmall inteſtines, which lie in this region of the belly, being conſtricted, the diameter of the paſſage was not only diminiſh'd, and the periſtaltic motion, in ſome meaſure, obſtructed; but even that ſome part of the irritation would be propagated, without any difficulty, to the neighbouring ſtomach, into which they were continued. And indeed, that the pain which aroſe in that part, from preſſing with the hand, or even from the inconvenience of flatus, would be much more clearly underſtood, if we ſhould ſuppoſe the tumour to belong to the inteſtines themſelves.

Nevertheleſs I deſir'd I might not be underſtood, as if, by ſaying theſe things, I meant to prefer my opinion to that of others, as I would ſubmit it to the conſideration of all; ſince I would not pretend abſolutely to determine on any thing, in an affair ſo difficult, and obſcure: and therefore did not deſpiſe the opinion of others. For although I remember'd frequently to have read of large tumours in the omentum, without the mention of any pain *(k)*; and had even determin'd, with the conſent of others, a tumour to be of this kind which I met with in the wife of a phyſician, who was of a full habit, and of a good colour, and felt no inconvenience therefrom, not even pain when it was preſs'd; yet that there may be, ſometimes, a tumour in the omentum of ſuch a nature, hardneſs, and ſhape, that by preſſing it, either in that part, or in the parts contiguous, a pain may be excited: of which circumſtance I knew that ſome learned men had not doubted *(l)*.

But as to large tumours of the meſentery, that they, by puſhing the inteſtines, and the omentum to the ſides, lie immediately under the anterior parietes of the belly, and are contiguous to them, may be confirm'd by more than one obſervation *(m)* of phyſicians, and anatomiſts. Moreover, that the difficulty of diſtinguiſhing the true ſituation of a tumour, was increas'd in

(*k*) Wharton adenogr. c. 12. vid. etiam ſuis locis pleraſque obſerv. indicatas in hac Sepulchr. ſect. 21. ſub obſ. 33. itemque in additam. obſ. 73. 80, 85. 88.

(*l*) Vid. ſect. modo cit. ſchol. ad obſ. 54. & in addit. obſ. 80. verſ. fin.

(*m*) Vid. River. prax. med. l. 13. c. 5. Wharton. l. cit. c. 11; Scultet. armam. chir. obſ. 62. & cæt.

bellies

bellies of this kind, which are fat, large, and ſubject to flatus and tormina of the bowels. For beſides that a great quantity of fat, lying betwixt the hand and the viſcera, is an obſtruction to our examination, there are, frequently, in ſuch bellies as theſe, viſcera; and, particularly, ſome of the inteſtines; drawn, or forc'd, out of their ſituations. But as there may be more than one ſeat of pain, ſo that there may be more than one cauſe of a very obſtinate vomiting.

Nor indeed did it eſcape me, that from the ring of the pylorus itſelf, a kind of excreſcence ſometimes aroſe, ſuch as I had often ſeen; which, if it be pretty large in its ſize, as a certain ſteatoma was in a phyſician well-known to ſome of my friends, may prevent the paſſage of the aliments: yet that, at the ſame time, I was by no means ignorant how many cauſes there may be in that place, or near to that place, both internally, and externally, producing the ſame effects; ſo that if we even reckon up a great number, we ſhall perhaps not hit upon the true one. For, to mention one caſe by way of example; the coats of the ſtomach being, every where about this paſſage, grown hard, and thick, that the paſſage becomes much narrower than it naturally is, and the aliments are not propell'd; which kind of diſorder had been found at Padua, in a prieſt; and not only in others of whom I had read in other places (*n*), as well as in the Sepulchretum (*o*).

And not to ſay that juſt the ſame effect would be produc'd, if any one of the diſorders ſpoken of, ſhould beſet a part of the duodenum, that was neareſt to the ſtomach (*p*): there certainly was an obſervation extant in the Sepulchretum (*q*), of a caſe not very much unlike this, if I remember'd rightly, whereof we were ſpeaking; ſo that the queſtion about the tumour of the omentum had recall'd it to my memory: for as the omentum had a large tumour in the epigaſtrium, of the hardeſt fat, the pylorus was ſo conſtricted by a ſimilar matter, which lay around it, that from hence an incurable vomiting, an obſtinate coſtiveneſs, and a waſting of fleſh had been brought on.

Of this laſt mention'd ſymptom there was no occaſion to ſay much, in regard to a patient, who not only threw up his aliments, but even a greater quantity of fluid than he took in: whether this water was from ſaliva, which often deſcended in great quantities into an empty ſtomach; or even was preſs'd out from the coats of the ſtomach itſelf, by the frequent ſtrainings to vomit: although ſome part of the chyle, which was prepar'd from the very few ingeſta that paſs'd into the inteſtines, might, moreover, be intercepted by the tumour, which belong'd either to the inteſtines, or to the meſentery.

From this tumour, or at leaſt on the account of this tumour, ſome particles that have ſtagnated long in the belly, and have, for that reaſon, become deprav'd, may, upon their return into the blood, have ſo irritated the heart, and arteries; that, finally, I was at liberty to conjecture the origin of the fever, in this, or ſome other ſimilar manner.

From what I had hitherto ſaid of the four articles propos'd to be conſider'd, in the beginning; although it appear'd wherein I differ'd from the others; it was, nevertheleſs, eaſy to conceive that I could not but agree with

(*n*) Vid. epiſt. 30. n. 13.
(*o*) L. 3. ſ. 8. obſ. 17. & ſeq.
(*p*) Vid. confirmatum epiſt. 30. n. 12.
(*q*) L. cit. ſ. 21. obſ. 80.

them, in determining the diſorder to be incurable. And this I readily confeſs'd: I only added this one thing, in particular; that I was afraid leſt the tumour might bring on death in ſome other way, rather than by an effuſion of pus; the ſigns of which were not, at preſent, very near at hand.

That it became us, therefore, in an incurable diſeaſe, to uſe all our efforts, that life might be prolong'd to as great an extent as poſſible; by reſiſting, as much as it was in our power, the cauſes that might accelerate death. That in the number of theſe cauſes vomiting was to be conſider'd, in more reſpects than one; by bringing on a waſting, by diminiſhing the ſtrength, by giving concuſſions to the tumour. And if the chief cauſe of vomiting could not be remov'd, yet that another might, at leaſt, be diminiſh'd; which, in ſome meaſure, perhaps exaſperated the former, as it generally does; that is the coſtiveneſs of the inteſtines. That the biſhop was by all means to be entreated to ſuffer clyſters to be made uſe of, which would have this effect; or if they were adminiſter'd without the deſir'd effect, would, at leaſt, ſerve for nouriſhment. But if he perſiſted in refuſing to admit of them, and if rhubarb, in the method preſcrib'd above, had really ſufficiently obviated the coſtiveneſs, without any inconvenience, that I had no objection to the uſe of it; not ſo much becauſe I approv'd of it, as becauſe other purgatives were partly not ſuitable to the caſe, and partly were evidently hurtful; and that I was therefore induc'd, and compell'd, by the neceſſity of the caſe, to admit of it.

However, that all irritating and unpleaſant medicines were to be avoided: and therefore I did not diſapprove of a ſmall portion of the viper; which might, without the knowledge of the patient, be boil'd in broths, and adminiſter'd by way of nouriſhment; unleſs they ſhould rather chooſe to diſſolve ſome of the jelly of the viper therein: for that the heat of the viper could not poſſibly be of any diſſervice, in ſo ſmall a quantity of either one, or the other, while the fever was thus ſlight; nor even if it were ſo great as moſt of them ſeem'd to imagine. And that I ſaid nearly the ſame things, of a proportionable quantity of ſarſaparilla, or rather of china-root.

As to the propoſal of giving mercury; I ſaid, in the firſt place, that the patient had not ſtrength enough to ſuffer us even to think of it: and if he had, that I ſhould much more readily approve of a ſmall blood-letting from the hæmorrhoidal veins, as moſt agreeable to what I had ſaid of the tumour: and in the ſecond place, that if the nature of the tumour was ſuch as they judg'd it to be, which I could not take upon me to deny; I mean that it ſeem'd, to the touch, to be evidently made up of ſcirrhous, and ſtrumous glands; certainly mercury was leſs proper than millepedes: and that theſe were more proper, likewiſe, on account of its being probable that they would prove diuretic at the ſame time, if this effect were really of the importance that had been ſuppos'd. But that nothing was of more importance than to lengthen out life, as I had already ſaid; and that this might be brought about by omitting every thing that was diſtaſteful, and giving ſuch things as were more grateful, and nouriſhing. And that we ought diligently to attend to the manner in which the ſtomach is affected by theſe different things, in order to make the chief uſe of thoſe which have been retain'd the longeſt, or not wholly thrown up.

5

24. Al-

24. Although I could not be ſo ſhort in this caſe, as I generally am in medical conſultations; yet the phyſician who ſpoke laſt made a ſtill much longer harangue: he was an elderly man, and a celebrated profeſſor. The amount of his ſpeech was this; that he acknowledg'd the nature of the tumour to be the ſame as the others thought it: but he ſuppos'd it could have no other ſituation than that of the meſentery, the omentum (for of the inteſtines he did not ſay a ſingle word) being put out of the queſtion, chiefly for this reaſon, becauſe it was without ſenſation, and could be cut into without pain. However, he confirm'd the opinion of the diſorder being incurable: approv'd of medical aliments, and among theſe the viper in particular: he condemn'd purgatives, and all violent remedies: but not ſo millepedes; as he remember'd a poor girl to have been cur'd of a ſtruma, by the uſe of them.

You have now, then, the ſummary of whatever paſs'd in the conſultation. But do not wonder that, although I have given, briefly, the opinions of four phyſicians, who flouriſh'd here, and were more eminent than others, at that time; I have, nevertheleſs, been more diffuſe in explaining my own: for this I have done that I might be leſs prolix, in accounting for thoſe appearances which were found in the body of the biſhop, after death; which happen'd about the twenty-eighth day after our conſultation. But let us finiſh the hiſtory of the diſeaſe that I had begun.

25. What the two phyſicians, to whom the cure had been committed, did afterwards, I never, in the leaſt, inquir'd; nor indeed is it my cuſtom, after I have given my opinion. Yet I heard, as did every one at Padua, that they had given rhubarb on the day following; but not within the former bounds; and, therefore, not without great uneaſineſs to the patient: and that, at length, they had perſuaded the patient to admit of clyſters ſometimes; and, by this means, had procur'd ſtools with ſome advantage. Laſt of all, when it had happen'd that two days were paſs'd over without any vomiting, I heard that expectations had been ſpread abroad among the populace, of the recovery of the patient; which I could wiſh had been accompliſh'd; but from what ſource this prevailing hope aroſe, I cannot tell.

Soon after, however, I heard that the vomitings had return'd, and even in a more violent manner than before. In the mean while a foreign phyſician came hither, who was, in the opinion of the people, very excellent: and he, they ſaid, had here pronounc'd this caſe to be deſperate; but had added, in ſome other place, that he could have overcome the diſorder by means of mercury, if he had come ſooner. Nor indeed was one wanting, when he was gone away, who promis'd, without the leaſt heſitation, to cure the patient by a certain remedy of his. This was an infuſion of what is call'd the lignum nephriticum; wherewith he, perhaps, might have diſcuſs'd ſome hardneſſes of the belly, at Venice. He gave it ſeveral times to the biſhop, but in vain. And now his waſting of fleſh being increas'd every day, and his ſtrength proportionably decreaſing, the diſorder haſten'd to its end.

At a certain hour the patient call'd out for more bed-clothes, as if he were cold; whereas, at other times, he could bear only the lighteſt coverings; that is by reaſon of the heat, but an internal heat: for externally, no perſon ever perceiv'd his body to be cold, or hot, but always gently warm.

His reſpiration was never bad. His pulſe was neither hard, nor intermitting; nor ever, in any meaſure, unequal: but had become very frequent, on the laſt days of his life, and ſo low, that by one of the phyſicians it was ſuppos'd to be quite loſt. To this was added convulſive ſtartings of the tendons, and ſometimes a very ſlight delirium. On the ſame laſt days, the vomitings ſtill continu'd; but the matter diſcharg'd was bitter, and ſmelt very ſtrong; and was ſo very black that ſome thought it to be blood: but a piece of paper, that had been dip'd into it, appear'd, after drying, to be of a dilute yellow colour, inclining to green; which ſhow'd the humour diſcharg'd to be bile. In this manner the patient ſtruggled on to the twenty-third day of June; on which day, in the afternoon, he was attack'd with ſo very violent a paroxyſm, that it was ſuppos'd he would have inſtantly died. Nevertheleſs he eſcap'd. But the ſame paroxyſm returning, on the following day, at the ſame hour, this excellent prelate; being perfectly in his ſenſes, and every now and then pronouncing ſome pious words, with a low voice; having turn'd himſelf to one ſide, without any aſſiſtance, which on the former days he could not have done; ſoon after departed this life in a placid and ſerene manner.

26. As the body was to be embalm'd in the evening, in order that the funeral rites might be perform'd on the third day after, all of us, who had given our opinion on the caſe, were call'd to the operation. And there, after having heard from the phyſicians of the biſhop, and his houſhold-prieſts, thoſe things that I have related to you as undoubted facts, concerning the latter part of the diſeaſe, I preſently after preſided at the diſſection, while I was ſurrounded by my fellow-phyſicians, and a great number of ſtudents. The abdomen, although the limbs and the face had been much more extenuated, than this part; had, nevertheleſs, ſo far ſubſided, that, even from this cauſe, it might be ſuppos'd the tumour had riſen up, and become protuberant, outwards, more than we had ſeen it before. Nevertheleſs, under the ſkin of the abdomen the fat was, univerſally, two inches thick.

The cavity of the belly being laid open, into which a bloody ſerum had been extravaſated, to the quantity nearly of three pints, two circumſtances drew the eyes of every one upon them at once. For, on one hand, appear'd the tumour, of which there had been ſo much controverſy, in the form of a large globe; or rather like a large hemiſphere; having the reſemblance, if you attended to the colour, the fœtid ſmell, and the inequality of ſurface, of a moſt foul cancer. And, on the other hand, which was a very ſtrange, and unuſual ſpectacle, the whole of the ſpace contain'd within the belly, from the navel downwards, was, univerſally; if you except the left and inferior part of the colon, and the rectum, with that part of the meſocolon belonging thereto, and the urinary bladder; entirely free from viſcera, and empty. And from hence it came immediately into my mind what the tumour was: and this ſuſpicion was confirm'd, firſt, by my own inſpection; and then by the inſpection of every one. That is to ſay, the whole inteſtinum ileum, and ſome part of the neighbouring jejunum, having left their ſituations, which are, naturally, below the navel; and being drawn upwards, and join'd together very cloſely, had, of themſelves, compos'd this large and prominent tumour, without the leaſt addition of any ſcrophulous, ſcirrhous, or cancerous ſubſtance.

For

For the inequality of the ſurface aroſe from thoſe frequent flexures of the inteſtines, and their unequal poſition, and conſtriction; ſo that they protuberated more in one part, and leſs in another: but the blackiſh colour, which was almoſt univerſal; I mean which had only ſome leſſer ſpaces interpos'd that were ſtill red; was manifeſtly owing to the inflammation of the inteſtines, which had already degenerated, in great meaſure, into a gangrene; doubtleſs from the return of the blood into the vena portarum being, at length, intercepted; the retardation of which I have ſpoken of above (r): and, finally, the ill ſmell was the conſequence of the gangrene, as it naturally is. The inteſtines of which the tumour was made up, were almoſt full of matter, like the ſtercoraceous matter generally contain'd in the large inteſtines, and not very ſoft, as we found by laying one of them open afterwards; ſo as to make it evident that the matter which naturally deſcends ſpeedily into the large inteſtines, being obſtructed, and having flatus join'd to it, the tumour might give that reſiſtance to the touch, which we had perceiv'd in the living body.

And, although by reaſon of the cloſe connexion of the inteſtines one with another; which I mention'd before; there was occaſion to take a very long time to ſeparate them by means of the ſcalpel (for drawing them on one ſide, and on the other, with the hands, was of no effect) yet about the middle, and almoſt the upper part, of the tumour, the ſeparation being leſs difficult, it was brought about in this part, at leaſt, and the interiors of the tumour brought to view; which were, in like manner, made up of inteſtines heap'd together beneath, and, in ſome part of the meſentery, which was neither grown hard, nor thick, nor of a black colour, that any of us could diſtinguiſh; but perfectly ſound, and fill'd with fat; which was, as it naturally is, of a white colour, inclining to yellow.

As the omentum had not appear'd, in any degree, hitherto, I turn'd my eyes to the upper region of the belly; where the ſtomach was ſunk down betwixt the deſcrib'd tumour, and the diaphragm: and as it did not very well appear, even by theſe means, but ſeem'd to be a kind of hard, thick, and heavy band, fixing itſelf cloſely to the fundus of the ſtomach, and the inteſtinum colon, that lay beneath the ſtomach; paſſing tranſverſely from one hypochondrium to the other; and depreſſing both the ſtomach, and this large inteſtine, by its weight, and thickneſs; I was, at length, ſcarcely certain that it was really the omentum, till it had been confirm'd by the others, as well as by myſelf, from the due conſideration of all circumſtances.

For the ſmall inteſtines, riſing into a tumour, had long ago driven the omentum up into that part; and there, being folded up together, it had coaleſc'd into one hard body, like a faſcia, or band, of an equal ſurface, but not of an equal thickneſs. For, in ſome places, it was of the thickneſs of one inch, in others of two, and in ſome again of three; as was clearly perceiv'd by the ſections: but the greateſt thickneſs was obſerv'd to be near the ſpleen in particular, as a rigid hardneſs was alſo; ſo that when it was cut into, the ſubſtance thereof grated under the knife: however, to the ſight the ſubſtance was every where uniform; but the hardneſs was, in ſome places, of the ligamentous kind as it were, and, in others, almoſt cartilaginous.

(r) N. 23.

In

In this ſtate then was the omentum; which did not fall under the notice of the touch in the living body: inaſmuch as lying betwixt the great quantity of fat of the abdomen, and the yielding viſcera, the ſtomach, and the inteſtinum colon; and by reaſon of its depreſs'd ſituation, and its very firm connexions; it could neither be laid hold of betwixt the hands, as that prominent tumour of the inteſtines could be, nor mov'd to which-ever ſide you pleas'd. The ſtomach was then examin'd. And after having exhauſted all the contain'd fluid; which was in great quantity, of a blackiſh colour, had a very filthy ſmell, and was, in every reſpect, ſuch as had been thrown up in the laſt vomitings; the internal ſurface of it appear'd of a reddiſh colour, inclining to brown; which, perhaps, might be the conſequence of being ting'd with the humour I have deſcrib'd; or might poſſibly be the effect of inflammation.

But in the antrum pylori, it ſeem'd, here and there, diſtinguiſh'd with certain ſmall coagula of blood, as it were; which, when more accurately examin'd, were found to be nothing elſe but ſmall and depreſs'd tubercles, internally, indeed, firm and white, yet, on the ſurface, affected with a gangrene: ſome of them were of an oval figure, and others had different figures and poſitions; but the greater part were made up of many, in ſuch a manner as to reſemble branching aſteriſks, as it were, or aſteriſks furniſh'd with inflected and bifurcated radii. Yet the more near they approach'd to the pylorus, from the beginning of the antrum, the ſmaller and leſs frequent did they become, ſo as at length to be quite ſolitary. That which was the largeſt of all ſcarcely reach'd the magnitude of a bean.

In the pylorus itſelf, neither theſe tubercles, nor any excreſcences, were obſerv'd: and, indeed, the paſſage through this part was not ſo much contracted, as to prevent a finger being introduc'd into it, according to my deſire. Yet there were in this part, and in almoſt the whole antrum of the pylorus; and, in like manner, in the firſt part of the inteſtinum duodenum, which was neareſt thereto, ſo very thick and hard coats, that, as they equall'd the point of the finger in thickneſs, ſo they did not yield much, in rigid hardneſs, to the omentum that I have deſcrib'd; to which they were likewiſe ſimilar in their hard and compact ſubſtance: and from this very ſubſtance, riſing up into little prominences, in ſome places, thoſe tubercles were form'd, which I ſpoke of before.

The liver was internally and externally pallid, and ſomewhat hard, but of its natural figure and ſize. The gall-bladder contain'd a bile like a blackiſh mud. The ſpleen, and the other viſcera, were ſound, as thoſe of the thorax alſo were; where the pericardium and the heart were ſeen to be cover'd over with fat. One viſcus of the belly, however, muſt be excepted; and that is the pancreas: but as I was about to proceed in my inquiry into the ſtate of this viſcus, my collegues began to be tir'd; and to think, as the night was now far ſpent, and the ſmell extremely offenſive, and as theſe very firm connexions of the omentum could not very ſoon be diſſolv'd, in order to lay bare the pancreas, that the diſſection had been ſufficiently proſecuted.

27. And, indeed, if you attended to what had preceeded, eſpecially to the tumour; on the particular nature and ſituation of which the controverſy had been agitated during the life of the patient; the inquiry ſeem'd to be carried ſufficiently

ſufficiently far. And as I was returning from the diſſection, together with my companions, being aſk'd by a very grave man, what appearance had, at length, been found; I immediately anſwer'd, for all of us, nothing but what had been previouſly hinted, in ſome meaſure, in our conſultation, and juſtly pronounc'd incurable. Nor did I conclude the narration in any different manner, when I wrote to that eminent ſenator, ſpoken of above (*s*), brother to the biſhop; when, on the day following, I ſent the ſummary, of what had been obſerv'd, to him, as my duty and reſpect oblig'd me: and this, as it was acceptable to him, he kept by him.

Nor, indeed, although I afterwards heard that one, and another ſummary, of theſe things, was in the hands of every one, would I, for that reaſon, give out mine; as well becauſe they were much more different from one another, than they were from mine, as becauſe I was never willing to begin unneceſſary controverſies. And what could be leſs neceſſary, than ſuch as could be determin'd by the teſtimony of the ſurgeons who had perform'd the diſſection? And this I took care to procure when the ſubject was quite recent; not in order to produce it then, but only to have it at hand, as I actually have, if, at any time, I ſhould produce the whole obſervation; and any one ſhould be in doubt about the ſtrict juſtneſs of my narration, from having peruſ'd any part of their ſummaries, which was ſomewhat different.

But I ſhall not now ſay what was wanting in theſe ſummaries, or what was ſuperfluous; or, finally, what was different from the truth: nor, indeed, ſhould I have made any mention of them, if I had not ſuppos'd that they had, probably, been ſeen by you, ſome time or other; and that you would wonder at my taking no notice of them. I ſhall only tell you this that was then ſaid by all the others, who were preſent at the diſſection: that one phyſician very properly confeſs'd the tumour, upon which there had been ſo much controverſy, to conſiſt of the ſmall inteſtines join'd and heap'd up together into a large globe; but this was ſaid without juſtice, that it had alſo conſiſted of "the meſentery, which was become very hard, and of the ſame colour" (that is to ſay, "black and gangrenous") with which the inteſtines were ting'd; and, finally, that it was "tumid."

So alſo, on the contrary, I will ſay that another of them, with juſtice, affirm'd the meſentery to be "white, and without any tumour, or hardneſs;" but thoſe things were not ſaid with propriety; when forgetting that he himſelf had, in the conſultation, conjectur'd a ſcirrhus of the meſentery, as well as of the omentum (*t*), he carp'd, not without ſome ſeverity, at him who had ſuppos'd a ſcirrhus in the meſentery; and, in like manner, where he diſcours'd upon the coalition of the inteſtines, and the ſcirrhus of the omentum, with ſuch artifice, that any one, who was ignorant of the affair, would not ſo much as ſuſpect the inteſtines to have been heap'd up into one globe, and to have riſen up into a tumour; but would ſuſpect, for this reaſon, that the tumour in queſtion had been made up, chiefly, by the ſcirrhus of the omentum; nay, would even certainly ſuppoſe, that this tumour was nothing elſe but the ſcirrhus of the omentum; which did not, however, begin "in the upper part of the navel," but much higher; nor was in the leaſt elevated, but lay quite ſmooth and depreſs'd.

(*s*) N. 21. (*t*) Supra n. 22.

How

How much more would it have become thoſe two ſenior phyſicians, to have given up all controverſy upon the ſituation of the tumour; which could now exiſt no longer with any propriety; and imitate the illuſtrious example of Hippocrates (*u*), and Galen (*x*), by candidly confeſſing that they had been deceiv'd in their conjectures, on the nature thereof; ſince it was not very pleaſing to me, who was the only one that had hinted at the real ſeat thereof, not to have been able entirely to avoid a tacit ſuſpicion of having been deceiv'd, in regard to its nature, in common with the reſt; but ſtill leſs ſo, to have had this ſuſpicion ſpread openly among the people.

28. It is of great importance for thoſe who are given to the ſtudy of medicine; and of a great importance to you, on whoſe account I have undertaken this long diſcourſe; not to be ignorant that a tumour once exiſted in the belly, which; although it was made up of the inteſtines themſelves; being, nevertheleſs, of an unequal and tuberous ſurface, and giving conſiderable reſiſtance to the touch, had impos'd upon five phyſicians; and thoſe, if you except me alone, very ſagacious, and experienc'd men; under the appearance of a ſcirrhus. And who can inquire into the marks by which this diſorder may be diſtinguiſh'd, unleſs the diſorder be made known by our ingenuous confeſſion? Nor, indeed, will theſe ſigns be eaſily found among our authors; ſince I do not remember to have read a hiſtory any where that was perfectly like this.

I have read, indeed, in the acts of the Cæſarean academy (*y*), "that all "the inteſtines were found to be cloſely cohering to each other;" or "the "ſmall inteſtines in particular, ſo very cloſely grown together with one an- "other, and with the meſentery, every where, that" they made up "one maſs, "or one conglomerated heap," therewith: and indeed I have read that, in a young woman, who had been frequently ſubject to pains of the belly, the celebrated Fantonus found (*z*) "almoſt all the inteſtines gathered up into one "conglobated body, as it were, and very cloſely conglutinated with each "other: and you may read in this twenty-firſt ſection of the Sepulchretum (*a*), "that all the inteſtines were conglomerated, and form'd into a kind "of globe:" and, in like manner (*b*), "that the inteſtines were ſo drawn up "to the ſuperior parts, as ſcarcely to fill half the capacity of the abdomen."

But in none of thoſe obſervations will you find that they were ſo drawn up, and conglobated, as to be externally prominent in the form of a circumſcrib'd and particular tumour: and in the two laſt this even could not have happen'd, as the bodies were in a dropſical ſtate, and a great quantity of water was interpos'd, ſo as to diſtend the whole abdomen: as it likewiſe could not happen in another dropſical woman, in whoſe body Thomas Bartholin (*c*) ſaw "all the inteſtines thruſt aſide to the right hypochondrium; ſo that, at "firſt, they ſeem'd to have been wanting;" or in a ſoldier, who, alſo, had labour'd under an aſcites; whoſe inteſtines Laubius (*d*) found "ſurprizingly "intwin'd, and collected together, into one globe, as it were, towards the "navel."

(*u*) Epidem. l. 5. n. 14.
(*x*) De Loc. aff. l. 2. c. 5.
(*y*) Tom. 1. obſ. 87. & tom. 6. obſ. 134.
(*z*) De obſerv. med. & anat. epiſt. 4.
(*a*) Obſ. 3. §. 8.
(*b*) Obſ. 20. §. 6.
(*c*) Cent. 1. hiſt. anat. 2.
(*d*) Eph. n. c. cent. 9. obſ. 64.

And

And this, perhaps, might have been the caſe; though it is not expreſly ſaid to have been ſo; in Cardinal Campegio, in whoſe body "all the in-"teſtines" (part of the colon and the rectum ought to have been excepted) "were forc'd together into the hypochondria; for which reaſon the inferior "cavity of the abdomen was deſtitute of inteſtines, and the ſpine un-"cover'd," as Columbus ſaw (*e*); "the novelty of which circumſtance," that was alſo ſeen by us in the biſhop, "could not," ſays he, "be ſufficiently "admir'd by the excellent Auguſtino Ricci of Lucca."

A ſtill more ſurprizing novelty of this kind, I afterwards met with in a female fœtus. For upon opening the belly, and wiping away the blood that was extravaſated therein, no inteſtine, beſide thoſe that I juſt now excepted, was any where to be ſeen; as all the others, with almoſt the whole of the meſentery, lay hid under the concave ſurface of the liver; and were confin'd in ſuch a manner, as I ſhall, perhaps, explain to you on a more convenient occaſion (*f*). But this nobody could have ſuſpected before diſſection; becauſe, by reaſon of that quantity of blood being extravaſated, the abdomen did not ſubſide, below the navel: and if it had ſubſided, who would not have imagin'd that it was to be imputed to the liver, which is always large in a fœtus, being, perhaps, much enlarg'd here, rather than to the inteſtines being drawn up behind the liver?

For Philip Jacob Hartmann (*g*) had, indeed, alſo ſeen a large tumour, in a girl of three years old, ſtretch'd out from the left ſpurious ribs, to the confines of the pubes; nor could he poſſibly have ſuppos'd it to be made up of "the inteſtines coaleſc'd into one body, with the greater part of all the me-ſentery;" ſo that "the back was the only part which lay conſpicuous to "the ſight:" yet he has not added any thing, whereby, if the ſame ſhould happen again, the nature thereof might be known. Columbus, however (*h*), had intermix'd ſome things, from whence we might collect a few marks to diſtinguiſh it by. "Wherefore," ſays he, the phyſician, when examining "the belly of the cardinal with his hand, might plainly feel the motion of "the great artery; and together with that, perceive a hardneſs; which hard-"neſs was nothing elſe but the bodies of the vertebræ."

Theſe marks it was not in my power to make uſe of in the biſhop, as I did not examine his belly below the navel; for the reaſon I have given you above (*i*): and even if I had made this examination, I ſuppoſe I ſhould have perceiv'd neither of theſe marks, by reaſon of ſo great a quantity of fat being interpos'd; or, at leaſt, not the motion of the great artery; or of the beginning of the iliacs; as the pulſe was neither ſtrong, nor large: for which reaſons neither the phyſicians, nor the patient, ſeem to have obſerv'd it; as they, otherwiſe, would not have denied that any thing preternatural was perceiv'd below the navel.

But in thoſe wherein the abdomen has leſs fat, theſe marks will not be without their advantage; provided there is ſome fat, and no ſuſpicion of the great artery being dilated in that part, or pulſating immoderately, from any other cauſe: for in theſe caſes, not only the pulſation of this artery is perceiv'd, even when the inteſtines lie betwixt, as is ſhown in this letter (*k*);

(*e*) De re anat. l. 15.
(*f*) Vid. epiſt. 67. n. 17.
(*g*) Eph. n. c. dec. 3. a 9. & 10. obſ. 105.
(*h*) Loc. citat.
(*i*) N. 21.
(*k*) N. 19.

but the hardneſs of the vertebræ alſo; as I have ſaid in another *(l)*. In a body, therefore, that is neither fat, nor very thin, nor liable to theſe ſuſpicions, if a pulſation be perceiv'd; and ſtill more, if that hardneſs be perceiv'd at the ſame time; we ſhall conjecture the inteſtines to be drawn upwards: and it will add no ſmall weight to the conjecture, to find that the abdomen is more depreſs'd below the navel, than it ought naturally to be; and more turgid above at the ſame time.

But if, together with theſe ſigns, a peculiar and moveable tumour ariſes in the upper region of the abdomen; ſuch as has been deſcrib'd in the biſhop while living *(m)*; we muſt not only take care, leſt, by reaſon of the reſiſtance, and inequality, or tuberoſity, of ſurface, we readily refer it to the claſs of ſcirrhous, or ſtrumous tumours; but we muſt, moreover, inquire by what ſymptoms we may rather be induc'd to ſuppoſe that it is made up of the inteſtines. Theſe ſymptoms will be, if we find that the patient had been frequently ſubject to pains of the ſmall inteſtines, and to a flux of blood from the hæmorrhoidal veins; although it has been afterwards diminiſh'd, or ſuppreſs'd; if the tumour be affected with pain, when the inteſtines are troubled with flatus; if the bowels have become more and more coſtive, from the time the tumour began; and other things of the ſame kind; which are either read in the hiſtory I have given you, or may come into your mind from reading it.

Yet theſe would be more peculiar marks, if the tumour ſhould be obſerv'd by the patient, or by the phyſicians, to be ſometimes more conſiderable; and, at other times, more ſlight; harder or larger; ſofter or leſs; as happens in inteſtinal hernias. And though it ſeems that this could happen very ſeldom, in ſuch a tumour as the biſhop's, by reaſon of the very frequent flexures, the conſiderable conſtriction, and the very cloſe coalition, in particular, of one inteſtine with the other, being injurious to their periſtaltic motion; which cauſes, for inſtance, obſtruct and retain in them, as I have ſeen, the matter from whence the reſiſtance ariſes; yet it is natural to ſuppoſe, that if the enquiry be made accurately, and at repeated times; and, particularly, when either no excrements have been diſcharg'd for ſome time, or a great quantity has been lately diſcharg'd; or when the patient is troubled with a large or ſmall quantity of flatus; it is natural to ſuppoſe, I ſay, that ſome one of theſe ſigns may be in ſome part found.

Theſe then are, in general, the remarks that came into my mind when I was thinking of this tumour. Others will add different ſigns; and you, in conſequence of your ingenuity, which is well-known to me, will add better. And that you may do this the more eaſily, I will ſubjoin another obſervation (although complicated with various diſorders; and perhaps not very accurately deſcrib'd, as I did not ſee the patient myſelf) which in ſome meaſure relates to tumours of this kind; but, at leaſt, relates to the ſubject of this letter, and to the lower region of the belly; which, as the order I propos'd to myſelf requires, comes now to be conſider'd.

29. A monk of the monaſtery of St. Franceſco, which is in the place of my nativity, having ſymptoms of a ſlight aſcites, ſeem'd to have been ſud-

(*l*) Epiſt. 10. n. 12. (*m*) Supra. n. 19.

denly emptied in the abdomen, by copious vomitings; except that in the hypogaſtrium, a tumour appear'd of ſuch a hardneſs, as to make thoſe who attended him ſuppoſe it to be ſcirrhous. When this tumour was compreſs'd with the hands, flatus was forc'd out from below. The vomiting continued; to which a conſtant and incredible nauſea being added, and an inſuperable coſtiveneſs, at length the inteſtinal fæces, or, at leaſt, a matter very ſimilar thereto, began to be thrown up. Therefore, although no pain in the belly, no ſigns of inflammation had come on, the patient was, nevertheleſs, carried off by the diſeaſe.

While he was at the point of death, his phyſician, who was a man of eminence, coming to me to beg of me to preſide at the diſſection, on the day following, if it were convenient for me; and having related to me (who was then confin'd to my bed with a ſlight fever) what I juſt now told you, I ſaid to him, I beg of you yourſelf to preſide; for you can do it extremely well; and as you have inform'd me of the ſymptoms which had preceded, I ſhould be glad to be inform'd, likewiſe, of the appearances you find: for what I have heard from you of the aſcites, the tumour, and the flatus being forc'd out when it was preſs'd; and, finally, of the ileos; ſeem to me to argue a coheſion, and ſome entangled ſtate, of the inteſtines. And on the following day, which was the ſixth of November in the year 1709, having very obligingly return'd to me, he ſaid, in the following manner did we find the appearances.

When the belly was open'd the inteſtines were found to be very livid, but not putrified. The ſmall inteſtines, in a certain part of them, being ſurprizingly entangled with each other, and join'd together by connexions made up of a firm and denſe ſubſtance ſimilar to a tendinous, and, indeed, almoſt ſimilar to a cartilaginous ſubſtance, compos'd that tumour; which was render'd ſo hard, not only on account of this interpos'd and connecting ſubſtance, but alſo on account of the fæces, with which they were fill'd, being form'd into a kind of ſmall globular bodies. Globules of this kind were not only in that part, but alſo in the neighbouring inteſtine colon; till at length it became impervious for ſome extent, not long before it terminated in the rectum; in which tract, when we cut into it, we found it to be made up, not of whitiſh, but entirely of fleſhy fibres. The ſtomach was internally livid to a ſmall degree, and full of a fluid of the ſame colour.

30. You ſee that another phyſician, and an eminent man likewiſe, was deceiv'd in the ſame manner, and for the ſame reaſon. And his obſervation, if it had been in my mind eighteen years after, as it was then remark'd, might have been uſeful, without doubt; not only to determine the ſituation of that tumour, which I have deſcrib'd to you at large (*n*), with ſomewhat more confidence; but alſo to conjecture the nature of it with much greater juſtice: although in the monk it was much leſs, and not ſo prominent, nor moveable, as far as I know, nor attended with any pain; and the diſcharge of flatus from below had follow'd the preſſure of it in the beginning; whether the inteſtine colon had not yet entirely coaleſc'd, or whether the extreme circular part of it, which was kept open, lay under the tu-

(*n*) Supra n. 19.

mour in ſuch a manner, that when the tumour was compreſs'd this part was compreſs'd alſo.

To theſe were added other different circumſtances; in particular the hardneſs which lay betwixt the inteſtines, and the foregoing dropſy of the aſcites kind: and from hence it was, join'd together with other tokens, that I ſuſpected ſome coheſion, as I have ſaid (*o*), of the inteſtines. For, in the firſt place, I had ſeen, in the year 1699; when Valſalva open'd the abdomen of a woman, who died of an aſcites, in the hoſpital of incurables at Bologna; the inteſtines adhering, almoſt every where, with the peritonæum; but particularly to one another, in a very great degree; ſo as to be almoſt grown into one ſubſtance; being connected, in the greater part of them, by a kind of cartilaginous ſubſtance; which, in ſome places, but chiefly about the colon, was equal to an inch in thickneſs.

In the ſecond place, I had read Ruyſch (*p*) taking notice of the inteſtines, in another woman, who died of the ſame diſeaſe; "not only as being grown, "every where, to the peritonæum, but to each other alſo." And I had heard from Valſalva, that, in one who, like this monk, had labour'd under a foregoing dropſy, the inteſtines were connected one with another; as you have it in the hiſtory of a perſon that I have deſcrib'd to you on a former occaſion (*q*). And you will, likewiſe, find in another letter which I have ſent you (*r*), that in a man whoſe belly contain'd a great quantity of water, I had ſeen the inteſtines already join'd to one another, by a kind of flaccid membranes, as it were: and theſe, probably, were the firſt beginnings of the coheſions; which, when the water is diſcharg'd, become more firm; and continue afterwards, even when the water, as frequently happens, is collected again: and I think I have ſufficiently ſhown you already (*s*), what the matter is, from whence membranes of this kind have their origin.

In regard to this connection of the inteſtines; although I ſee that men of great eminence have the ſame opinion which I have; I do not, however, think, that they always cohere together in this manner; but in different ways alſo; which I took notice of, when I wrote to you (*t*) upon the adheſion of the lungs to the pleura, or of the heart to the pericardium. And, indeed, where the coalition is brought about in conſequence of inflammation only; by which, to uſe the words of Ruyſch (*u*), "we ſee that the viſcera are often drawn "together, and united to one another;" there are different modes of explaining, and accounting for, the union; that is to ſay, whether you follow, with moſt others, thoſe who conſider the dryneſs of the ſurfaces that are contiguous to each other; or thoſe who attribute it chiefly to the viſcidity of theſe ſurfaces, from an increas'd perſpiration of humours; which, as they might have added, the retarded motion of the blood renders more viſcid.

But as Crellius (*x*), that author whom we loſt by an untimely death, has receded from the firſt, and even the ſecond, mode of explication, not without aſſigning a reaſon for his diſſention; it is neceſſary to attempt the ex-

(*o*) N. 29.
(*p*) Obſ. anat. chir. 45.
(*q*) Epiſt. 17. n. 17.
(*r*) Epiſt. 10. n. 13.
(*s*) Epiſt. 20. n. 37.
(*t*) Epiſt. 16. n. 15; epiſt. 18. n. 15, ep. 23. n. 17.
(*u*) Obſ. cit. 83.
(*x*) Diſſert. de viſcer. nexib. inſolit. n. 14.

planation of this appearance in a different manner. But not to quit the ſubject of the dropſy, it is alſo very eaſy to conceive; as the ſame author has acknowledg'd (*y*); how a coalition of the viſcera may happen in that diſeaſe, if the water, in which they are macerated, be of a more acrid nature than uſual, ſo as ſlightly to erode the ſurface of them. And what muſt be the conſequence where it is purulent, as it was in one of the two obſervations, which I took notice of above (*z*), from the Sepulchretum, wherein the inteſtines were found to be drawn up to the upper parts? And ſigns of eroſion were not wanting even in the other, in which the inteſtines of a dropſical woman were ſeen to be roll'd up into one heap, and made into a kind of globular figure. You ſee then, by how many obſervations I was induc'd to ſuſpect, that there might be ſome coheſion of the inteſtines; when I heard that, beſides the other marks, there had been an aſcites.

31. But as the inteſtines may cohere with one another, and, without leaving the ſituations in which they are naturally plac'd, be heap'd up together; ſo that, lying one over another, they may form a tumour, or a kind of globe; if you enquire after the cauſes of this conglomerated ſtate; I do not know whether any one more probable can be thought of than pains: by the force of which, the ſeats of the inteſtines may be chang'd, as well as coheſions be brought on. And that the ſituations are frequently chang'd, in thoſe who are ſubject to pains of the inteſtines, is ſhown, in a former letter, from obſervations of bodies of this kind (*a*): as when the included flatus forces the diſtended colon to ſome other part of the abdomen, or diſturbs it in its natural ſituation: which cauſe, if transfer'd to the ſmall inteſtines, will help you to conceive, in what manner ſome tracts thereof, which are dilated, may raiſe themſelves up into that part, where they were not before, and thruſt to one ſide, and even force beneath themſelves, thoſe tracts which naturally lay in that ſituation.

Add to this the motions of thoſe parts of the inteſtines, which are tortur'd with convulſive contractions, in conſequence of pains: add the contractions of this kind in the meſentery; by which being criſp'd up, it may either draw to itſelf ſome of the annex'd inteſtines, or moſt, or all of them; and it will appear much more clearly, how they may be forc'd together, into globes of a ſmaller or of a larger ſize. And if they be retain'd in their new ſituation, for a conſiderable time, by theſe cauſes that are mention'd, and are preſs'd one againſt another; it will appear, at the ſame time, why they there begin to cohere with each other, on account of the pains; eſpecially if you conſider that many, and very viſcid, particles of humours, which ſtagnate there, are preſs'd out from their ſurfaces by the ſame contractions: by means of which particles; particularly in bodies that abound with viſcidity; the ſame ſurfaces may be join'd together, as if by a kind of gluten.

Nor, indeed, is it any new thing that the inteſtines ſhould be connected, and conglutinated, in conſequence of pains. For thus, not to lead you too far from the Sepulchretum, in a woman who had been carried off by long-continu'd tortures of theſe viſcera (*b*), they were found to be "connected

(*y*) Ibid. n. 12.
(*z*) N. 28.
(*a*) Epiſt. 34. n. 4.
(*b*) L. 3. ſect. 14. obſ. 16. §. 4.

"to

" to each other, in many places;" and in another, who had died after " very " great, and incredible" pains of the belly (*c*), the obſervator found " all " the ſmall inteſtines, which protuberated, connected very cloſely with each " other."

And if you underſtand this word *protuberated* in ſuch a ſenſe, as to ſignify that they were heap'd up together, into one prominent globe; and in the ſame manner that I have related above (*d*), from the obſervation of Fantonus; " roll'd up as it were into one globular body;" you will perceive that they were found to be connected, and heap'd up together, at the ſame time, in conſequence of pain, juſt as they were found to be, by us, in the biſhop (*e*): although in theſe other obſervations, a peculiar, and externally circumſcrib'd, tumour is not ſpoken of; and in one of them, could not have exiſted; as in that caſe a large quantity of bloody ſerum, that had been extravaſated, diſtended the whole abdomen. And although the monk was not ſo excruciated with pains (*f*), as the biſhop was; yet I do not, for a certainty, know that he had been free therefrom before.

32. But as to his not only having, like the biſhop, the inteſtines conglutinated, but connected, to one another by a kind of cartilaginous ſubſtance; this is neither ſurprizing to me, who have likewiſe ſeen the ſame thing, in conjunction with Valſalva, after an aſcites; as I have already ſaid (*g*): nor am I ignorant that the peritonæum itſelf; the production of which compoſes the external coat of the inteſtines; may become very thick in dropſical bodies; and even " in proceſs of time acquire a cartilaginous hardneſs;" according to the obſervation of Paul Barbette (*h*); who puts us in mind of this, as " neceſſary to be known in the paracenteſis of the abdomen."

But that the inteſtines are ſometimes connected, by hard bands of this kind, even without an aſcites, we learn from the obſervation of Saporiti in Valiſneri (*i*). " We found," ſays he, " the large inteſtines, particular- " ly where they are reflected, in the neighbourhood of the duodenum, " conſolidated, by means of callous protuberances, with each other, and " with the adjacent inteſtines; ſo that it was difficult to diſtinguiſh the one " from the other; and what was worſe, their ſubſtance ſo concreted, like a " hardiſh cartilage, and thicken'd, that ſcarcely any cavity remain'd." A ſubſtance, and contraction, of which kind, Ruyſch (*k*) found in the inteſtinum rectum; when he was oblig'd to divide it from the os ſacrum, with an iron wedge, and a wooden mallet.

But Benivenius (*l*) appears to have found the ſame diſorder of the inteſtines, after death, formerly, which he had been before ſenſible of in the living body; when a kind of hard ſubſtance made a reſiſtance to his preſſure upon the belly. And Donatus (*m*) produces another obſervation from Hollerius, and Stalpart (*n*) different ones from different authors. And as in this author (*o*), examples are pointed out of the ſame kind of coalition alſo; and ſuch as

(*c*) Sect. 21. obſ. 41.
(*d*) N. 28.
(*e*) Supra n. 26.
(*f*) N. 29.
(*g*) N. 30.
(*h*) Anat. pract. l. 4. c. 2.
(*i*) Opera tom. 3. p. 3.
(*k*) Obſ. anat. chir. 95.
(*l*) De abdit. morbor. &c. cauſis c. 34.
(*m*) De medic. hiſt. l. 4. c. 10.
(*n*) Cent. 1. obſ. 56. & in ſchol.
(*o*) In eod. ſchol.

might

might be refer'd to that which I have ſaid was found at the extremity of the colon in our monk; and as other inſtances are, moreover, extant in the Sepulchretum (*p*); I will add nothing elſe, unleſs, that there was this peculiarity in the monk; I mean that, in the part juſt now mention'd, the colon ſeem'd to be made up entirely of fleſhy fibres: which might be ſuppos'd to be the effect of redneſs from a preceding ulcer. And if this ſuppoſition is juſt, then he could not have been without previous pains of the inteſtines, according to my conjecture.

But now let us come to tumours of the viſcera of a different kind.

33. A woman, ſeemingly, not much leſs than forty years of age, had already labour'd, a year before, under a uterine hæmorrhage. This was ſucceeded by a uterine fluor; but of what colour, or ſmell, is uncertain: this, however, is certain, that it was attended with very ſevere pains of the hypogaſtrium, and of the parts that lie beneath; particularly in the night time; and with a tumour, into which alone ſhe ſaid ſome tubercles, that could formerly be perceiv'd to be ſcatter'd in the middle of the hypogaſtrium, had coaleſc'd. This tumour was now in that very ſituation; yet aſcended ſo high as to be ſcarcely diſtant from the navel by the breadth of two fingers; being wide in proportion, and ſo prominent externally, that it was very apparent to the eye, even at a diſtance; was roundiſh in its figure; equal in its ſurface; and, if you touch'd it, gave reſiſtance.

A conſtant dripping of urine had come on, a ſpaſmodic pain in the throat, a nauſea, and ſometimes a vomiting; a waſting of fleſh, and a fever. With all which diſorders ſhe was ſo weaken'd, and broken down, about the beginning of the year 1741; when ſhe came into the hoſpital at Padua; that ſhe died within ſix or ſeven days: nobody doubting but ſhe died of a cancerous tumour of the uterus. And, indeed, a cancer had in part eroded the uterus; but the tumour did not belong to that, as I found by diſſection, and demonſtrated to a great circle of doctors and ſtudents.

For when the belly was open'd, it immediately appear'd, that the bladder, diſtended with urine, had made up that great tumour; a circumſtance which nobody would have thought of; her urine having continually run from her, as I have ſaid. This receptacle had coaleſc'd, on its anterior ſurface, high above the pubes, with the parietes of the belly: and, if you except a conſiderable ſpace of the ſame anterior ſurface, and of the upper part of the fundus, it had all its remaining parietes compos'd of a hard and white ſubſtance, of the thickneſs of a finger: as we ſaw plainly, after drawing out the urine; a great quantity of which it contain'd; not in a lixivious ſtate; not thick; not of a diſagreeable ſmell; but almoſt watry.

The internal ſurface of the bladder was ſound, only diſtinguiſh'd, in ſome places, with ſmall ſanguiferous veſſels, which were ſcatter'd here and there; ſo that the orifice of the bladder, at which part they are frequently very thick, was entirely without theſe veſſels. On each ſide of this orifice, within the bladder, a white body was prominent, of an irregular figure; equal in ſize to a man's thumb, and produc'd from the ſubſtance which ſurrounded the urethra; which ſubſtance was here univerſally become thicker, hard, and

(*p*) L. 3. ſect. 13.

white:

white: and of this colour the urethra itſelf alſo was internally. Moreover, the whole of that part of the ureter, which is carried betwixt the membranes of the bladder, was more prominent than natural within the bladder, till it terminated in an orifice much larger than the uſual one: this appearance was on both ſides, and both the ureters were univerſally dilated; one of them being full of urine, and the other almoſt full of air. But even the tubuli of the kidnies, and the pelvis on both ſides, were dilated, though the kidnies were in other reſpects ſound.

Having examin'd the urinary organs, we look'd over the genital parts. And, in the firſt place, we found both the teſtes, very cloſely connected to the parietes of the pelvis; and both of them of a white colour: the left of which was equal to the ſize of a large cheſnut, and the right to that of a ſmall nut. The latter of theſe contain'd a ſmall quantity of water, perhaps within ſome kind of veſicle; being in other reſpects white, as externally, and hard: but the left had nothing under its coat, except a ſoft and white matter like ſuet.

The uterus, however, if you conſider'd the fundus of it, was externally white, and ſmooth; and internally ſound in its parietes; except that theſe were more ſoft than they are naturally. But the external ſurface of the cervix was unequally turgid on the back-part: and the cervix itſelf, and the vagina, from the upper part almoſt to the lower, were made up of very thick, white, and hard parietes; the internal ſurface of which, and the oſculum uteri itſelf, were eroded, and deſtroy'd with deep, and diſcolour'd ulcers. For they were white in ſome places; of a black bloody colour in others, and in ſome cineritious. And from all of them a putrid matter, ting'd with theſe colours, was eaſily rub'd off with the handle of the knife; till we came to the hard and white ſubſtance whereof I ſaid that the parietes conſiſted; into which kind of ſubſtance, alſo, whatever is wont to be of a pinguedinous and membranous nature, at the ſides of the vagina, was converted.

But, although both the bladder, and the ſubſtance ſurrounding the urethra, had been ſo chang'd, as I have ſaid, on the anterior ſurface of the cervix, and vagina; yet the inteſtinum rectum could be ſeparated from the vagina; which was, in other reſpects, much more ulcerated than the cervix uteri; without being injur'd. And in the whole of this diſſection, no very diſagreeable ſmell was perceiv'd. To inſpect the other viſcera was not neceſſary; nor, indeed, had we leiſure. However, in the abdomen nothing, beſides theſe parts, appear'd to be evidently morbid; though I obſerv'd the ſtomach to be very much contracted; and all the inteſtines to be more contracted than uſual alſo: neither of which appearances is to be wonder'd at here, in a woman who ſcarcely took in any food by reaſon of her nauſea; and ſometimes threw it up again, as I have ſaid, when it was taken in.

34. This obſervation may, in many reſpects, be very uſeful by rendering phyſicians cautious. For who, after having heard that one tumour was made up of tubercles which formerly lay at a diſtance from each other; and that this tumour was join'd with marks of a uterine cancer; whether he attended to the preſent, or the foregoing ſymptoms; would not have thought that it was a tumour of the uterus itſelf? Yet this tumour did not relate to the uterus, but to the diſtended bladder; which, by forcing the neighbouring inteſtines

teſtines upwards, while it began to raiſe itſelf higher, and, by compreſſing ſome parts of them, perhaps gave that appearance of divided tubercles.

Who, in like manner, that had been inform'd of the urine dripping away from her conſtantly, inſtead of being retain'd, would have ſuſpected what was really the caſe, that a great part of the urine, nevertheleſs, ſtill remain'd in the bladder; and, by the dextrous introduction of the catheter, might have been drawn off, at leaſt, in part, to the great alleviation of the miſerable patient? For as to Ruyſch finding (*q*) that fullneſs of bladder, at length, in a lying-in woman, who likewiſe believ'd that ſhe had no urine in her bladder, notwithſtanding it was diſtended with a great quantity, in conſequence of being deceiv'd by a ſimilar ſtillicidium, as it ſeems; it is very certain that there was not the leaſt ſign in that woman, of a diſeas'd uterus, to which the tumour of the belly could be refer'd. And, indeed, in another woman (*r*), who had ſome ſymptoms of the uterus being pregnant with a fœtus, nobody refer'd the tumour of the belly to any other part but the uterus, though it was, in fact, made up of a large abſceſs, form'd betwixt the anterior coats of the bladder.

When, therefore, there is a tumour of the hypogaſtrium in women, although marks of a diſeas'd uterus may not be wanting, a ſuſpicion of the bladder, which is ſituated before the uterus, ought not, by any means, to be intirely paſs'd by: nor are we to take for granted, becauſe they ſay that their urine is continually running from them, that no part of it, for that reaſon, remains: nor, finally, although it is certain, that the vagina is ulcerated, together with the uterus, are we always to conclude, that the ſtillicidium of the urine is to be accounted for from the ulceration of the annex'd urethra and bladder. For neither of them was ulcerated in this caſe. But, what is an extraordinary inſtance of cauſe and effect, a ſcirrhous hardneſs, of both of them, brought on an incontinency of urine, and a retention at the ſame time.

For the hard parietes of the urethra could not be ſo conſtring'd, as properly to ſhut up the orifice of the bladder. And the hard parietes of the bladder, or, at leaſt, the chief part of them, could not be ſo contracted, as the extruſion of the urine requires: nor could the remaining part of them, which was not hard, ſufficiently help forward this diſcharge, in conſequence of its having coaleſc'd with the anterior paries of the belly, almoſt univerſally: and the diſcharge was ſomewhat impeded by thoſe two thick bodies, which were prominent at the ſides of the orifice. On all of which accounts it is not to be wonder'd at, if ſo much urine was retain'd, as not only to fill the enlarg'd bladder, but even to dilate the ureters, and the pelvis of both kidnies, with their tubuli.

35. And having made nearly theſe remarks upon the urinary parts, to thoſe who were preſent, I then immediately added ſome of thoſe things, in regard to the genitals, which I ſhall here ſubjoin: that the uterus, together with its appendages, was extremely ſubject to ſcirrhi; a diſeaſe that is extremely difficult of cure, unleſs you ſoon find it out; and incurable if it has degenerated into a cancer. That I had heard one of my preceptors, I mean Albertini,

(*q*) Adverſ. anat. dec. 2. c. 9. (*r*) Vid. Sepulchr. ſect. hac 21. obſ. 23. in additam.

ſay that he had, with great ſucceſs, diſcuſs'd a tumour of the uterus, which ſeem'd to him, when he examin'd it with his hand, to be ſcirrhous, by the uſe of ground-pine alone, and without any excretion being the conſequence thereof: that another of my preceptors, I mean Valſalva, was us'd to aſſert in his medical opinions, that either for cancerous tumours of the uterus, or of the breaſts, he had found the practice of bleeding, four times a year, to be the moſt advantageous remedy to prevent their increaſe; that is to ſay, bleeding twice in the ſpring, and twice in the autumn. But he ſaid it was manifeſt that, in the latter caſes, the ſtrength was to be attended to; and agreeable to reaſon, that, in the former, the cauſes of the ſcirrhus ſhould be conſider'd.

For although the ground-pine, by its attenuating and abſterſive quality, takes away obſtructions of the viſcera, and hardneſſes of the breaſt, according to the obſervations of the ancients; yet that I ſhould not be willing to give it to thoſe women who had been ſubject to uterine fluxes, as the woman was, whoſe hiſtory I have given; but would very readily give it to thoſe, who, by having matter tranſlated to the uterus, from the joints which were affected with arthritic pains, had lately fallen into a ſlight obſtruction thereof; for it will excite the menſtrual diſcharges, but is oppoſite to the cauſe of the gout, as you know.

Moreover, that the extenſions, the ſpecies, the ſeats, and the origins, of uterine ſchirri differ much from one another. That this had been extended widely to the vagina alſo, and the parts annex'd to it; and not only laterally, but even on the anterior part; that is in the urethra, and bladder, on the ſurface by which it was turn'd towards the uterus. That the whole of it had conſiſted of a uniform and hard ſubſtance; and this of ſuch a kind that, even when turn'd into an ulcerated cancer, the odour of which is generally extremely offenſive, it had no diſagreeable ſmell. That the ſituation of this, in regard to the uterus itſelf, had been the whole cervix; whereas, there are thoſe, to which part of the cervix, or part of the fundus, or the whole fundus, afford a ſituation. Finally, that the origins of ſome are internal, and of others external. And having ſaid theſe things in a brief manner, and hinted ſlightly at thoſe which relate to the ſuet-like matter, found in one of the teſtes, I made an end of ſpeaking.

36. But to you I will now explain, ſomewhat more at large, the laſt of thoſe remarks, which I then made with ſo much brevity. I believe that I have ſeen the origins, or firſt principles of uterine ſcirrhi, more than once, both internally, and externally. As to the internal, however, I ſhall have a more convenient opportunity of ſpeaking thereof hereafter (*s*); I ſhall here only mention the external.

On the external ſurface of the uterus, then, I have ſeen tubercles prominent, being fix'd in the neareſt part of its ſubſtance; at one time of a red colour degenerating into livid, and at another time of a white colour, and a ſcirrhous hardneſs; as by reading over again my letters (*t*), or by examining ſome of them that I am to ſend you hereafter (*u*), you will clearly per-

(*s*) Epiſt. 47. n. 26. & ſeq.
(*t*) Ep. 38. n. 28. & ep. 37. n. 29.
(*u*) Ep. 56. n. 20.

ceive

ceive. And I ſuppoſe theſe tubercles to be enlarg'd, and grow out into ſcirrhous tumours. For as to the puſtule which I have deſcrib'd to you on another occaſion (*x*), as being ſeen by me in the ſame ſituation, and the little bodies which Valſalva ſaw ſcatter'd about (*y*), and the tubercle ſeen by Santorini (*z*); I do not doubt but they belong quite to another claſs; inaſmuch as the laſt-mention'd was of the ſpecies of encyſted tumours, and the others either had pus in them already, or becauſe, as they had a ſimilar appearance in other places, they would have had a pus afterwards, or a pultaceous matter.

For the uterus has, ſometimes, ulcers alſo externally, and not theſe only, but excreſcences likewiſe; and in regard to theſe, you will read the deſcriptions of two very large ones in the Sepulchretum (*a*); one of which conſiſted of a coat that was "like lard, or ſuet;" and the other was even "ſill'd "with fat." And theſe two I particularly point out; becauſe, in the ſame place (*b*), a paſſage of Severinus is quoted, wherein he confeſſes, "that on "the external habit of the uterus, he had very often happen'd to meet with "melicerides, and atheromata:" but at the ſame time does not call to mind, if I underſtand him rightly, whether he had ever happen'd to ſee "any" of the ſteatomatous kind in that part.

But, at leaſt, in the ſame ſection of the Sepulchretum, to omit the example (*c*) of the greatly-enlarg'd uterus, which "univerſally reſembled a kind "of cartilaginous fat;" for this certainly belongs more to ſcirrhi than to ſteatomata; at leaſt, I ſay, "an abſceſs in the collum uteri, reſembling the "nature of a ſteatoma," is mention'd from Ballonius (*d*); and Rhodius (*e*) has expreſly mention'd "a ſteatoma adhering to the fundus uteri;" and Goetzius (*f*) deſcribes another: and I have deſcrib'd to you, in the preceding letter (*g*), the very ſubſtance of the fundus uteri, as well as the teſtes and tubes, converted into a ſuet-like matter; and it is not at all ſurprizing, that what happens internally, ſhould alſo take place externally; provided the ſebaceous particles, wherewith the blood abounds, be carried to the external parts of the parietes uteri, as well as to the internal: although we have leſs frequent examples of the uterus being affected with a ſteatoma, than of the teſtes.

Omitting, therefore, ſuch as I do not ſuppoſe to relate to ſcirrhi, I conſider the other diſeaſes, which I have taken notice of above, as their primordia, and others of the ſame kind, likewiſe, as, for inſtance, that which is deſcrib'd by Paawius (*h*), as "a white excreſcence of the bigneſs of a wart; which, when cut into, contain'd nothing within, but was ſolid in every part:" and ſtill more thoſe deſcrib'd by Ruyſch (*i*), under the appearance of "ſmall "round tumours, in a very ſcirrhous ſtate, or rather ſcirrhi, not only grow-"ing to the uterus, by the intervention of a peduncle, but even without it;" which uterus was every-where beſet with the ſame kind of tumours, and others of different magnitudes.

Theſe two examples you will add to as many others; for Crellius has not

(*x*) Ep. 35. n. 16.
(*y*) Ep. 22. n. 18.
(*z*) Ep. 19. n. 51.
(*a*) Sect. hac 21. obſ. 54. §. 1. & 18.
(*b*) Ibid. ſchol. ad obſ. 37.
(*c*) Obſ. cit. 54. §. 15.
(*d*) Ibid. §. 11.
(*e*) Cent. 3. obſ. 46.
(*f*) Act. n. c. tom. 2. obſ. 207.
(*g*) N. 34.
(*h*) Sepulchr. ſect. cit. obſ. 4. §. 32.
(*i*) Theſ. 6. n. 30.

produc'd any more, of this kind, in that Programma (*k*); wherein he, alſo, has undertaken to deſcribe a hard and ſolid "tumour," of the bigneſs of a mulberry, "which adher'd, externally, to the fundus uteri." And I ſaid, of this kind, for he has alſo made remarks on another kind; as you may ſee in his works: and indeed bony tumours, or tumours in a manner bony, are ſpoken of in the *Commercium Litterarium* (*l*).

Nor would obſervations be wanting, if the queſtion were of them in this place, of the uterus; which either ſeem'd to be affected with a ſcirrhous tumour, on account of many ſtones wherewith its ſubſtance was ſtuff'd up (*m*); or was really ſcirrhous, in one half of it (*n*); or in the whole (*o*); ſo as to be equal to the weight of four and forty pounds: and hiſtories of tumours would be at hand, the ſituations of which might eaſily impoſe upon the phyſician who examin'd them with his hand, ſo as to make him take them for ſcirrhi of the uterus; whereas they in fact had not the leaſt reference to this; but either belong'd to the fundus of the bladder (*p*), or to ſome other neighbouring part (*q*).

But not to digreſs from the diſcourſe which I had begun, upon external ſcirrhous tubercles, and even to finiſh it; if you ſhould enquire, how it happens that ſcirrhous tubercles may be, ſometimes, found hanging, by a very narrow peduncle, from the uterus, as I have ſaid was ſeen by Ruyſch, or from the other viſcera; although this may be conceiv'd of in more ways than one; yet it will here be ſufficient for me to recal to your mind that method by which I have explain'd hydatids (that hang in the ſame manner, and the transformation of theſe into hard tubercles, after diſcharging their fluid) in the preceding letter (*r*); for that the uterus has its hydatids alſo, is ſufficiently demonſtrated in the ſame place (*s*).

For I muſt, here, paſs over, from tumours of the uterus, to tumours of the ovaria: of which, however, I ſhall ſay ſo much the leſs at preſent, as I was under neceſſity of ſaying ſo much in the preceding letter: and to what was there ſaid you may add what follows.

37. A woman, who ſeem'd to be about forty years of age, being oppreſs'd with a violent diſorder within the thorax, was brought into the hoſpital of St. Mary de Morte at Bologna, about the end of April, in the year 1706; but ſo late in the diſeaſe, that, dying ſoon after, ſhe could not even tell any one, under what diſagreeable ſymptoms ſhe had labour'd, through the courſe of her diſeaſe.

Being about, therefore, to open her body, in order to examine, with accuracy, into the ſtructure of ſome of the viſcera of the belly, and having obſerv'd two things; that in a pretty laudable habit there was no appearance of the breaſts, beſides the areolæ, and the nipples; and that the abdomen was mark'd with no furrows, or rugæ, ſo that it appear'd ſhe had never born any children; I obſerv'd, at the ſame time, a certain tumour, not ac-

(*k*) Vitembergæ. a. 1739.
(*l*) A. 1735. hebd. 51. n. 2. in fin. & a. 1742. hebd. 45. in fin.
(*m*) Eph. n. c. cent. 1, & 2. obſ. 77.
(*n*) Cent. 9. obſ. 31.
(*o*) Hiſt. de l'Acad. R. des ſc. a. 1748.
(*p*) Cit. eph. cent. 1 & 2. obſ. 186.
(*q*) Eph. earund. Dec. 3. a. 7. & 8. obſ. 123.
(*r*) N. 38. in fin. & n. 35.
(*s*) N. 42.

cuminated, but flat; which, in ſome meaſure, rais'd up the hypogaſtrium, and that part of the umbilical region, which was neareſt thereto.

The belly, therefore, being open'd, I ſaw that the cauſe of the abdomen being tumid in that part, was a certain body, of the bigneſs of a very large fiſt; by which the inteſtines, that lay thereon, were driven upwards and outwards. This body was in the middle of the pelvis; of a roundiſh figure, and of a tuberous ſurface; but in ſome places ſmooth and even; ſo as to make it appear, at firſt, that it could be nothing elſe but the uterus tumefied. Yet it was, in fact, the left teſtis, that had grown out into this bulk. The denſe coat whereof was, here and there, unequal, with certain ſmall abſceſſes; ſome of which being ſpontaneouſly open'd, diſcharg'd a white pus; ſuch as many of them contain'd.

From the body of the teſtis itſelf, a thin bloody ichor was expreſs'd, mix'd with pus; yet not in great quantity. But when I had quite laid it open; and had agitated it for ſome time in water; I plainly perceiv'd, beſides ſome fibres, and veſſels, and one or two cells, of the bigneſs of a ſmall grape, which comprehended, within a black coat, ſomething very ſimilar to coagulated blood; I plainly perceiv'd, I ſay, that the remaining, and much greater part, that is, almoſt the whole ſolid part of this body, was nothing elſe but a congeries of reddiſh veſicles, crouded cloſely together, ſo as to be of an incredible number, by reaſon of their ſmallneſs; and all of them diſtended with a dirty-colour'd ſerum.

Yet the fœtidneſs of the ſmell was not very conſiderable: nor was the neighbouring tube injur'd, although externally, as well as the other, it had hydatids: nor had the uterus itſelf, to the ſide of which the deſcrib'd body was annex'd, contracted any diſorder therefrom, except in its external membrane. For I cut through it; and obſerv'd only this one thing, which did not at all relate to the tumour; that, at the ſides of this cavity, the anterior paries was connected to the poſterior, by ſmall membranes paſſing betwixt. The other teſtis was ſmall, unequal in its ſurface, and had only one veſicle contiguous to it, which was pretty large; and contain'd a ſmall quantity of fluid under its thick white coat: in the other parts it was white and hard: yet from one very ſmall part of it, was diſcharg'd a little quantity of white pus.

38. Diſorders of the teſtes happen ſo frequently to women, compar'd with the females of other animals; and eſpecially tumours, either of a dropſical nature, or of other kinds; that it is very natural to conjecture moſt of theſe things to happen, not without the paſſions of the mind being, in ſome meaſure, the cauſe of them. For what effect theſe paſſions may have, in retarding, or diſturbing, the courſe of the humours, is by no means unknown. Yet to this we may add the monthly afflux of blood into the uterus, and the parts that lie about it; which we know frequently deviates from the original intention of nature, in many different ways. Add to theſe cauſes alſo, the bulk and weight of the uterus, when impregnated; by which, when the woman ſtands, or ſits down, the teſtes are preſs'd cloſely againſt the bones of the pelvis; and ſtill more when it contracts ſo very ſtrongly in a difficult birth; or unſeaſonably, in one which would certainly be eaſy, and natural, if not accelerated by the improper haſte of midwives; who are, for the moſt part, unſkilful. For theſe, therefore, and other reaſons, it is not ſurprizing if the

teſtes

teſtes of women are frequently diſeas'd, become tumid, and increas'd to ſuch a degree, that they very often reſemble even an aſcites; as in that obſervation, which was made in the ſame hoſpital at Bologna, by a very learned and diligent man; I mean Heraclito Manfredi; who was with me, when I made the former, and many others. I will communicate it to you, in the ſame manner that he communicated it to me, when I reſided at Venice.

39. A woman, who had been ſuppos'd to have an aſcites, died. The belly was not found to be fill'd with extravaſated water; but with a tumour of the left teſticle. This tumour weigh'd four and twenty pounds; being fill'd, in great meaſure, with a viſcid and black humour; which you might very well compare with the dirty water, that flows through the channels, in the ſtreets of a city. The other contents of the tumour were ſhut up in veſicles of unequal magnitudes, which communicated one with another; ſome of them being fill'd with a yellow, ſome with a viſcid matter, and others with a lymph, which, when put on the fire, did not coagulate. Although it was connected to no part, except the left ſide of the uterus, yet it was quite immoveable, to which-ever ſide the body was turn'd; becauſe, as it fix'd down a kind of lower appendage of itſelf, which conſiſted of many hydatids, betwixt the uterus and the inteſtine, it ſo exactly fill'd the inferior part of the pelvis, that while it was drawn out from thence by force, a ſound was heard, ſimilar to that which is made by pulling away a cupping-glaſs from the ſkin.

40. In gueſſing at the nature of other hidden diſeaſes, and particularly of this, we muſt join together many marks, even for this reaſon, that ſome one of them may happen to be abſent ſometimes, as here. For among the ſigns of this diſeaſe, ſome mobility of the tumour is plac'd by Schorkopffius, in the diſſertation which he publiſh'd at Baſil, in the year 1685, *de Hydrope Ovarii Muliebris* (*t*); a diſſertation that merits more than ordinary praiſe; eſpecially when we conſider the time wherein it was written; even on account of the obſervations of this diſeaſe, which he had receiv'd from that very great phyſician and anatomiſt, Wepfer (*u*); which I am not ſo much ſurpriz'd ſhould be unknown to Nuck (*x*), as that they were omitted in thoſe additamenta to the Sepulchretum; wherein (*y*) the words of Harderus, in which he expreſsly commends this diſſertation, and thoſe obſervations, are copied.

However, in the firſt times of the diſeaſe, perhaps, (which, as I ſaid in the preceding letter (*z*), ought, for this reaſon, to be attended to) there might, probably, have been a mobility of the tumour, in the woman in queſtion: as there may, at the ſame early times, alſo, be "a ſemicircular figure of the tu-"mour," in the dropſy of the tube, according to the conjecture of Brechtfeld (*a*), which Schorkopffius (*b*) has follow'd; in order to teach us by what mark we may diſtinguiſh the dropſy of the ovarium, and the dropſy of the tube, from each other: yet when the diſeaſe is advanc'd, I do not doubt but the tumour of a dropſy in the tube, no leſs than that of an aneuriſm in the artery, comes near to the oval, or ſpherical figure; which is confirm'd from

(*t*) Theſ. 21.
(*u*) Theſ. 16. 17. 23.
(*x*) Adenogr. c. 8.
(*y*) Schol. ad obſ. 47.
(*z*) N. 60.
(*a*) Bartholin. act. Hafn. vol. 1. p. 1. obſ. 103.
(*b*) Theſ. 22.

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the delineation given by Munnickius, of a dropſical tube, to illuſtrate that obſervation, which is ſpoken of by me in the ſame letter (*c*).

But while I was attending to a number of hiſtories of tumours, of whatever kind, in the teſtes of women, it happen'd to come into my mind, that this might, perhaps, be added to other marks thereof: I mean that it begins in the left part of the hypogaſtrium. For I obſerv'd that the tumour was in the left teſtis, and not in the right, which was ſeen by Manfredi (*d*); and that which was ſeen by me alſo (*e*); and not only theſe, but thoſe likewiſe which were ſeen by Kerckringius (*f*), Wepfer (*g*), Harderus (*h*), Nuck (*i*), Drelincurt (*k*), Reiſelius (*l*), Gahrliepius (*m*), the younger du Verney (*n*), and this laſt author in two caſes; Rud. Jac. Camerarius (*o*), Maggi and Dodi (*p*), Riedlinus (*q*), Schacherus (*r*), Alexander Camerarius (*s*), Gullmannus (*t*), Guttermannus (*u*), Baſſius (*x*), Vacherius (*y*), Benevolus (*z*), Targioni (*a*). And, indeed, where there was a tumour of both the teſtes, the largeſt was found, by Hunerwolffius (*b*), in the left: nor do I forget that I have deſcrib'd to you hydatids, as being ſeen by me, within the left only (*c*); or much larger in this (*d*), than the other.

As I was attending to this very great conſent, in ſuch a number of obſervations; and was already ſo far ſettled in the opinion, as to be much diſpos'd to account for the cauſe of the difference, from the leſs expeditious return of the blood, from the left teſtis, to the vena cava; as from thence it muſt be brought through a much longer paſſage, than from the right; I recollected that I had, however, read not a few examples of tumours, which belong'd to the right teſtis. For Veſalius (*e*) had ſeen the right grown out into nine or ten large hytids. And in the ſame alſo ſince that, when it was diſtended with ſerum to the quantity of nine pints; an example "of the dropſy of the teſtes" is propos'd by Caſper Bauhin (*f*): who (*g*), with Hildanus (*h*), at another time, likewiſe, ſaw the right teſtis of the magnitude of a gooſe's egg, full of oblong hairs, and a mucous matter.

Theſe hairs were alſo found by Blaſius (*i*), together with other things, in the teſtis of the ſame ſide; which was increas'd into a very great bulk. And as there were others beſides, whom I ſhall mention below (*k*), that found hairs in tumours of the teſtes; there were ſome, as I ſhall then ſay, who ſaw them in the left; and yet as many who ſaw them in the right.

(*c*) N. 59.
(*d*) N. 39.
(*e*) N. 37.
(*f*) Spicileg. anat. obſ. 10.
(*g*) Apud Scorkopff. th. 17.
(*h*) Ibid. theſ. 15.
(*i*) C. cit.
(*k*) Ibid.
(*l*) Eph. n. c. dec. 2. a. 10. obſ. 27.
(*m*) Earund. dec. 3. a. 2. obſ. 61.
(*n*) Hiſt. de l'acad. r. des ſc. a. 1703.
(*o*) Biga. obſ. med. c. 1.
(*p*) Apud Valliſner. iſtor. della generaz. p. 3. c. 5. & tab 12.
(*q*) Eph. n. c. cent. 7. obſ. 56.
(*r*) Diſſert. de virg. aſcitica.
(*s*) Act. n. c. tom. 1. obſ. 160. verſ. fin.
(*t*) Eorund. t. 2. obſ. 80.
(*u*) Eorund. t. 3. obſ. 105.
(*x*) Dec. 4. obſ. anat. 8.
(*y*) Hiſt. de l'acad. r. des ſc. a. 1739. obſ. anat. 3.
(*z*) Oſſervaz. 9.
(*a*) Prima Raccolta di oſſervaz med.
(*b*) Eph. n. c. dec. 2. a. 9. obſ. 99.
(*c*) Epiſt. 15. n. 8.
(*d*) Ep. 21. n. 47.
(*e*) De corp. hum. fabr. l. 5. c. 9.
(*f*) Theatr. anat. l. 1. c. 35.
(*g*) Ibid.
(*h*) Cent. 5. obſ. 48.
(*i*) Part 1. obſ. med. 9.
(*k*) N. 41.

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A tumour of the ſame teſtis (not to detain you with a long detail) you will find to have been ſeen by Chriſtopher Harderus (*l*); by Theodorus Zwinger (*m*); by Lebenwaldius (*n*); by Gandolphius (*o*); by Klaunigius (*p*); by Jo. Dav. Mauchartus (*q*); by Miegius (*r*); by Alexander Camerarius (*s*); by Trew (*t*); and even by our Mediavia; as I have written to you in a former letter (*u*).

Nor, indeed, do I find any difference betwixt the tumours of the right, and the left teſtis, in one and the ſame woman; whether deſcrib'd by Heintzius formerly (*x*); or, afterwards, by Nabothus (*y*), and by Laubius (*z*); nor have I ſeen any in thoſe which I have given the hiſtories of, in the preceding letter (*a*): or, if I find any difference, it is in the greater magnitude of the right; as in the obſervations of Bauhin (*b*), of Gandolphius (*c*), and of Goetzius (*d*).

In the laſt place: If the queſtion be of hydatids, growing to the ſubſtance of the teſtis, Kerckringius (*e*) has obſerv'd, that thoſe which he found, in an infant, "of the bigneſs of a pigeon's egg," were not at the left, but upon the right teſtis. There were, without doubt, many more obſervations on both ſides: for I have only taken notice of thoſe which I at preſent call'd to mind; not ſo much as you might perceive it to be the effect of meer chance, that ſo many obſervations occur'd to me at firſt, and all of them taken from the left ſide, as that you might have a great number in readineſs, if, by comparing them one with another, you might be able to draw uſeful hints from ſome, in order to conjecture at a hidden, and, at the ſame time, frequent diſeaſe.

41. Nor is what I ſaid of hairs being found, within the teſtes of women, by Bauhin, and Blaſius, very extraordinary. For Bauhin (*f*) has propos'd that obſervation in ſuch a manner, as to hint that it was not the only one, nor the firſt: and, afterwards, both Blaſius, as I have ſaid, and others, among whom is Wepfer (*g*), and Andreas Veronicus (*h*), found the ſame appearance; but theſe two on the left ſide; yet, on the right, were they found by Stalpart (*i*), and the celebrated Haller (*k*): and not to add more, ſome learned men of Bologna obſerv'd them once and again in the ſame city, and in my memory; and Menghinus, and Bonzius (*l*), lately, in the left teſtis; and three and fifty years ago, he whom I ſpoke of above (*m*), Manfredi, in the right.

(*l*) Eph. n. c. dec. 1. a. 3. obſ. 180.
(*m*) Earund. dec. 2. a. 9. obſ. 136.
(*n*) Earund. dec. 3. a. 1. obſ. 92.
(*o*) Hiſt. de l'Acad. R. des. ſc. a. 1707. obſ. anat. 4.
(*p*) Eph. n. c. cent. 7. obſ. 64.
(*q*) Earund. cent. 8. obſ. 14.
(*r*) Act. n. c. tom. 1. obſ. 85.
(*s*) Ibid. obſ. 160.
(*t*) Commerc. litter. a. 1734. hebd. 44.
(*u*) Epiſt. 29. n. 14.
(*x*) Apud Schenck. obſ. med. l. 3. ubi de hydrope obſ. 6.
(*y*) Diſput. de ſterilit. mulier. n. 11.
(*z*) Eph. n. c. cent. 5. obſ. 21.
(*a*) N. 34.
(*b*) Cit. c. 35. primo loco.
(*c*) Cit. hiſt. primo loco.
(*d*) Act. n. c. tom. 1. obſ. 207.
(*e*) Obſ. cit. 10.
(*f*) C. cit. 35.
(*g*) Vid. theſ. 17. Schorkopffii cit. n. 40.
(*h*) Apud Targioni cit. ibid.
(*i*) Cent. 2. p. 1. obſ. 37.
(*k*) Opuſc. pathol. obſ. 42.
(*l*) Comment. de Bonon. ſc. acad. t. 2. p. 1. inter medica.
(*m*) N. 38.

For

For he wrote to me that a globe of the bigneſs of a very large egg, comprehended in a white, and almoſt cartilaginous, coat, yet in ſome places pretty thin, and of a blackiſh colour, was grown to the ſubſtance of the right teſtis: that within this globe had lain hid a quantity of hairs, in a conglomerated ſtate, quite diſjoin'd from that coat, and daub'd over with a kind of ſuet, as it were: that within the conglomerated hairs was a certain nucleus, from which ſome veſſels went into the continu'd ſubſtance of the teſtis. Which veſſels and nucleus I do not remember to have been obſerv'd by others; nor yet the two circumſtances which Bauhin had remark'd, that is to ſay, white hairs fix'd into the ſurrounding coat, but none at all on the pubes of that woman; although ſhe was by no means a girl, and had even brought forth a child.

But while I was reviſing this letter, I lit on a programma, entitled, *de Ovarii Tumore Piloſo*, publiſh'd at Leipſic, in the year 1735, by Polyc. Gottl. Schacherus; who not only mentions other obſervers of hairs, and of a fat matter, in the teſtes of women, and eſpecially on the right ſide; but deſcribes the ſame things, alſo, as being found by him in the left teſtis, which was very conſiderably enlarg'd: and, in particular, ſays much on the ſubject of theſe hairs; and confirms, not only by words, but even by figures, that they had come forth "from the internal ſurface of the incraſſated coat, which, for that reaſon, he does not ſcruple to compare with the external hairy ſkin of the head. And indeed I have remark'd that hairs had been alſo ſeen by the celebrated Targioni *(n)*, inherent, by one of their heads, in the thick and tenacious coat, juſt as they generally are in the ſkin. But from what cauſe hairs are form'd within the teſtes, if they are really hairs, it is difficult to ſay: and yet not more than within other parts. For even Cornelius Celſus *(o)*, has ſaid, that in tumours of the thyroid gland, "hairs mix'd with ſmall bones," are ſometimes included: and others, quoted by the celebrated Heiſter *(p)*, have ſeen them in different places; as I myſelf alſo have *(q)* within the tranſverſe proceſs of the dura mater.

But this letter is already very long; ſo that it rather becomes me, now, to ſee how I may conclude it with ſome obſervation that ſhall anſwer to that laſt of Valſalva's *(r)*. This will be an obſervation, if not of the ſtomach being prolaps'd, at leaſt of the ſpleen; and will be taken from the very friendly letter of the ſame Manfredi, whereby, in the year 1718, he communicated this, as he did, in like manner, two others, which were by no means common obſervations.

42. There was a man, who had a ſwelling of his belly, in the region of each groin. But the left tumour, which was well-known to be a hernia, as it had brought on death by cauſing an ileos, gave us occaſion to know what the right was.

For the belly being open'd, the ſpleen was found at the right groin, from whence it could not be remov'd, although the body was much ſhaken by taking it out of the grave. This ſpleen was about the weight of three pounds, of the thickneſs of five inches, twelve in breadth, and as many in length. It was

(*n*) Cit. ſupra ad n. 40.
(*o*) De med. l. 7. c. 13.
(*p*) Epiſt. de pilis, &c. ad Paverum.
(*q*) Epiſt. anat. 20. n. 58.
(*r*) Supra n. 14.

connected to the ſtomach, by a kind of rope which lay hid under a part of the inteſtines, being two inches in thickneſs, made up of ſanguiferous veſſels, and contain'd in a thickiſh coat like a capſula; ſo that in colour, and a certain contorſion of veſſels, it was like the funis umbilicalis; although, externally, it had certain appendages, the remains perhaps of the lacerated membranes, which, at firſt ſight, reſembled thoſe adipoſe appendiculæ, wherewith the large inteſtines are furniſh'd. The branches of the veins that go to the ſpleen were extremely dilated: and that which is call'd the vas breve eaſily admitted the fore-finger.

43. Although Blaſius (*s*), when he publiſh'd the ſame obſervation of a prolaps'd ſpleen, which Ruyſch (*t*) publiſh'd afterwards, ſaid ſomething more than the other, of what had been obſerv'd, both in the living body, and after death; and among theſe things, of "the ſplenic veſſels being in-"creas'd to a ſurprizing degree, both in length, and capacity;" yet I do not remember to have read any author, who has deſcrib'd the funis of the ſplenic veſſels, in caſes of that kind, with more accuracy than Manfredi.

But, as to what relates to the cauſes of this diſeaſe, I acknowledge, indeed, that the weight of the ſpleen being increas'd, muſt have had great effect in relaxing, or breaking through, the membranous bands, which connect it to the ſeptum tranſverſum; and, indeed, moſt of the obſervers have either mention'd, or hinted at, an increas'd weight, together with the prolapſus. However, when I call to mind thoſe enlarg'd ſpleens, which had by no means fallen down; ſuch as I have more than once deſcrib'd to you (*u*), or ſuch as you will read of in the Sepulchretum (*x*); I readily perceive that ſome other cauſes ought to be added to that of weight, as, for inſtance, the greater laxity, or weakneſs, of thoſe ligaments, a fall from a high place, or other things of a ſimilar kind; among which conſider whether you chooſe to place that which Riolanus (*y*) ſuppos'd of the kidney. His words are theſe, "the cauſe of a laxation of the kidney may be a violent, and long-con-"tinu'd cough, which, perpetually agitating the diaphragm, may remove "one or other of them from their ſituation;" that is, one or other of the kidnies, which lie upon the diaphragm.

44. But by what ſigns this diſorder may be known, and diſtinguiſh'd from others, is to be enquir'd from the hiſtories thereof: although not all thoſe who found it in the dead body, could inform us how the patients had been particularly affected, when living. For certainly theſe ſymptoms are not peculiar to a prolapſus of the ſpleen, that we have in Ballonius (*z*), in an example which is of ancient date, when compar'd with the others. Nor from the obſervation of Cabrolius (*a*), which, perhaps, was not made long after the former, can we gather any thing elſe, except that the ſpleen could eaſily be perceiv'd, in the living, as well as in the dead body, "to ſwim through "the whole cavity of the belly." Which is a ſign that, I believe, may not

(*s*) P. 1. obſ. med. 14.
(*t*) Obſ. anat. chir. 62.
(*u*) Vid. præſertim epiſt. 36. n. 11. & 17.
(*x*) L. 3. ſect. 16. obſ. 9. & ſeq. plurib. & ſect. 21. obſ. 34. §. 1. 2. 3.
(*y*) Anthropogr. l. 2. c. 26.
(*z*) Epidem. l. 2. vere a. 1578.
(*a*) 6. in obſ. var.

be

be altogether without its advantage, but ought to be attended to, as I have ſaid of others more than once, in the earlieſt times of the diſeaſe.

For in proceſs of time it may eaſily be wanting, in conſequence of the ſpleen being become immoveable, as you have ſeen in the obſervation I have given you from the letter of Manfredi; and as you will ſee in Ballonius: for the ſpleen lying upon the bladder, "adher'd thereto very cloſely." This is confirm'd by Riolanus, where he ſays, in his Encheiridion (*b*); that this diſorder had been "four times ſeen" by him: and, certainly, in his Anthropographia (*c*), he does produce two examples, in both of which the ſpleen had connected itſelf to the uterus, and the neighbouring parts, ſo firmly, that in one of them, it could no more be replac'd in its ſituation as before, while the woman was living; and in the other it long impos'd upon the phyſicians by the appearance of a mola.

The ſame author gives us theſe marks (*d*), whereby to diſtinguiſh it from a prolaps'd kidney, "an oblong tumour, and an emptineſs of the left hypo-"chondrium;" the laſt of which we muſt enquire after in the patient, when faſting; and if we perceive it (which is eaſy to do, in a patient in whom the ſpleen has been perceiv'd to be tumid before its prolapſus) we ſhall have a much better mark to diſtinguiſh this prolaps'd ſtate of the ſpleen, from any other hard tumour of the epigaſtrium, than its figure; which, in diſeas'd parts, and particularly in this, as even Riolanus (*e*) himſelf teaches, we are not ignorant may frequently and conſiderably vary.

But from the example of Blaſius (*f*) we may gather two things; one, that if we ſhould chance to meet with what happen'd to him, as I ſuppoſe, for this reaſon; becauſe the ſpleen had fallen downwards gradually, the ligaments being by degrees relax'd, and not ſpeedily ruptur'd; that is if we ſhould happen, firſt, to perceive a conſiderable tumour occupying the left hypochondrium, with ſome part of the epigaſtrium; and, after ſome ſpace of time, find that it occupies the hypogaſtrium, more than thoſe parts; we may then be confirm'd in our conjecture: for otherwiſe, to attend to the place only, in which we ſhall at length perceive it, although it may be ſometimes of uſe in our determination, that we feel it on the left ſide; yet in this method of judging we may ſometimes be deceiv'd, as the obſervation of Manfredi (*g*), who found it at the right groin, demonſtrates.

The ſecond concluſion which we may gather is, that, if the other ſigns ſhow the tumour to ariſe from the prolaps'd ſpleen, we are not, becauſe the tumour ſometimes retains its mobility, "beyond the ſpace of ſix months," which Riolanus (*h*) had fix'd, ſo as to change its ſituation, on a change of ſituation in the body; we are not, I ſay, for this reaſon to imagine, that the tumour cannot be from a prolapſus of the ſpleen. For although it is wont, at other times, to adhere very eaſily, as I have ſaid; yet in the caſe of Blaſius it was pendulous even then, though the tumour had exiſted "more than three "years and a half;" and could even be variouſly mov'd, according to the various agitation of the body. And from the ſame caſe we learn, as it is re-

(*b*) L. 2. c. 26.
(*c*) L. 2. c. 23.
(*d*) Encheir. c. cit.
(*e*) Ibid.
(*f*) Obſ. ſupra ad n. 43. cit.
(*g*) Supra, eod.
(*h*) Encheir. c. cit.

lated by Ruyſch (*i*), that this diſeaſe happens, ſometimes, after a difficult birth, and not without the moſt violent pain: the former of which confirms what we have added in regard to the cauſes of the diſeaſe (*k*); and by the latter we are admoniſh'd that we muſt not ſuppoſe pain to be wanting in all theſe diſeaſes, and at every time of the diſeaſe, becauſe the other hiſtories do not make mention of it.

The hiſtory of Anthony de Pozzis (*l*) teaches us, that, notwithſtanding an enlarg'd ſpleen, having chang'd its ſituation by reaſon of its weight, had occupied the hypogaſtrium, for four-and-twenty years, the woman had liv'd nevertheleſs, had been three times pregnant in that ſpace, and had brought forth children that were healthy, and likely to live; ſo that we have leſs occaſion to wonder that the other woman, ſpoken of by Ballonius (*m*), did once retain her fœtus quite till the proper time of delivery; though ſhe, at length, died in the birth. The obſervation of Drelincurt, given us by Schorkopffius (*n*), confirms nothing at all, but that phyſicians may eaſily be deceiv'd in this diſeaſe, by taking it for a utero-geſtation.

Finally, the example of Bonetus (*o*) might go pretty far in proving what I juſt now ſaid of excruciating pains in the belly, if there had not been another diſorder beſides, in the abdomen of that virgin. Nor do I remember, at preſent, to have heard, or read, more than theſe ten obſervations of the ſpleen being prolaps'd; ſo that Ruyſch (*p*) might, with reaſon and juſtice, reckon "a prolapſus of the ſpleen into the pelvis," among the caſes which he had remark'd as the moſt rare. Six of theſe obſervations relate to women, two to men: but the remaining ones might relate to either one or the other; as Riolanus (*q*) has only hinted at, and not related, them, by ſaying that unſkilful and incautious phyſicians are deceiv'd in this manner, "by "the appearance of a mole, or a ſcirrhous uterus, in women; and in men by "the appearance of a glandular tumour, like a ſteatoma, lying hid in the "meſentery."

It has never yet happen'd to me, to meet with this appearance in diſſection, though I have been very deſirous, on ſeveral accounts, to enquire with accuracy into many circumſtances; but particularly to enquire what then happens to the annex'd pancreas, ſtomach, and the entire trunks of the ſplenic veſſels. And there are indeed, in the obſervations which have been quoted, eſpecially in that of Ballonius, and Cabrolius, ſome things which relate to the ſtomach. But as they might be from ſome other cauſe, and do not properly correſpond, in this part, with the hiſtories of Pozzi, and Bonetus, I have purpoſely paſs'd them over.

45. I have, likewiſe, purpoſely ſaid nothing of what was found by Hildanus (*r*), in the body of a woman; as I read that the ſpleen was very much enlarg'd, and extended to the hypogaſtrium indeed, but not prolaps'd thither; as it has ſeem'd to men in other reſpects very learn'd, in the mention (*s*) made by Hildanus of the ſame example, which they have ſuppos'd to be

(*i*) Obſ. 62. cit. ad n. 43.
(*k*) Eod. n.
(*l*) Eph. n. c. Dec. 1. a. 4. obſ. 30.
(*m*) Loc. cit.
(*n*) Diſſert. ſupra n. 40. cit. theſ. 22.
(*o*) Sepulchr. l. 3. ſect. 14. obſ. 37.
(*p*) Reſp. ad Bidl. vindic.
(*q*) Encheir. c. cit.
(*r*) Cent. 2. obſ. 45.
(*s*) Epiſt. 55.

another

another obſervation. So I have conſider'd, as a reference to, or commemoration of, an obſervation formerly publiſh'd (*t*), what Ruyſch has ſaid in his Adverſaria (*u*): for it is not ſurprizing if he, being a very old man, ſhould have written ſome things in this reference, which do not altogether agree with what he had ſaid thirty years before; ſince even thoſe things that he had then written, that is twenty years after he had obſerv'd them, do not ſufficiently agree with what Blaſius has recorded (*x*), at the diſtance of no more than ſeven years, from the time of making that obſervation; Blaſius, I ſay, who was both conſulted by the woman when living, and preſent at the diſſection, which he ſays was perform'd by Ruyſch on the twenty-fourth day of January in the year 1670.

Ruyſch gives us the ſame year, and ſufficiently determines the time of the year alſo, when he ſays that this very hiſtory of his is related in the third decade of Juſtus Schräderus, obſervation the fourth; who ſays, in this part of his work, that Ruyſch had told him, on the thirty-firſt of March, in the year 1670, that he had "lately" perform'd the diſſection. But if an obſervation of this kind were in the number of thoſe, which might eaſily happen twice, to one anatomiſt, within two months, how came it to be rank'd among the moſt rare obſervations by Ruyſch (*y*)? Yet Riolanus (*z*) ſaw it four times; and "twice," as I read while I am reviſing this letter, the illuſtrious Van Swieten (*a*) ſaw, in dead bodies, "the ſpleen in a ſcirrhous and enlarg'd ſtate, and "fallen down quite to the pelvis," who I could wiſh had been at leiſure to add the other circumſtances that attended.

You will, however, take notice of theſe things: though it does not ſeem improbable to me, that any one perſon may have met with a prolaps'd ſpleen more than once; it does not, nevertheleſs, ſeem very probable that any one ſhould have met with it twice, within the ſpace of two months. Yet if you ſhould think that this word "lately" is taken, by me, in too ſtrict and confin'd a ſenſe; although not by reaſon of this circumſtance alone, that firſt obſervation of Ruyſch has ſeem'd to me, by no means to agree very well with the deſcriptions of others, that were publiſh'd before; I am not averſe to your conſidering the ſecond as another, and numbering it with the reſt, which are taken notice of above (*b*).

46. Finally, what Riolanus (*c*) thought of the cure, in the firſt times of the diſeaſe, and what he did with this view; and what he propos'd, or what he forbad, in caſe of the ſpleen being fix'd to the parts of the hypogaſtrium; you will learn from himſelf. For I am not willing to make ſtill longer, a letter which is already too long; the prolixity of which, though not to be compar'd with that of the former letter, you will bear with the greater patience, when you obſerve, that I have, as I hate repetitions, almoſt finiſh'd therein, not only whatever relates to the ſection *de Ventris Tumore*, but alſo whatever belongs to the other *de Hypogaſtrii Dolore*. Farewel.

(*t*) Cit. ſupra ad n. 43.
(*u*) Dec. 2. n. 9.
(*x*) Cit. ſupra ad n. 43.
(*y*) Vid. ſupra n. 43.
(*z*) Supra n. 44.
(*a*) Comment. in Boerh. aph. §. 958.
(*b*) N. 44.
(*c*) Encheir. & Antrop. capitib. ad n. 44. cit. ſupra.

LETTER the FORTIETH

Treats of Pain in the Loins.

WE are now come to diſorders, the peculiar ſituation and cauſe of which are frequently very obſcure; that is to ſay, to thoſe which relate to the urine, and urinary paſſages. And this will appear even from the ſubject with which I begin; I mean "the pain of the loins." For this frequently relates to the kidnies being affected with ſandy particles, or calculi: although that it does not leſs often, either relate to ſome other part, or even to the kidnies themſelves, when affected from other cauſes, you not only very well know yourſelf, but will very clearly perceive alſo, from thoſe obſervations which I ſhall immediately deſcribe to you, both from the papers of Valſalva, and my own. For the firſt of both of them will relate to the kidnies, and calculi; and the latter to other diſorders of the kidnies, or of other parts. I will begin according to cuſtom, as it is proper I ſhould, with thoſe of Valſalva that belong to the firſt claſs.

2. A prieſt of fifty years of age, having been many years ſubject to arthritic pains, eſpecially of the fingers, was, at length, ſeiz'd with a nephritic pain. There was not only a frequent vomiting of bilious matter, but once alſo of blood, which had often been diſcharg'd by the noſtrils likewiſe. After that his urine, from being in ſmall quantity, and watery, began to be diſcharg'd in a larger quantity, together with a mucilaginous and opaque matter: convulſive motions of the whole body ſuddenly came on; and theſe returning again, but in a more violent manner, carried him off.

The belly being open'd, all the inteſtines were found to be of a colour inclining to livid. But the ſtomach was ſound, and no traces appear'd of the place from whence the blood had proceeded. In the kidnies lay ſeveral very ſmall calculi, ſome black, others of a white colour; and beſides theſe there were ſinuous cavities full of urine, but particularly in the right: the urine, alſo, by its quantity, had dilated the pelvis, and the ureter, which was continu'd therefrom.

In the head, the internal ſubſtance of the brain was, in ſome meaſure, pregnant with ſerum; but the ventricles of the brain particularly abounded therewith.

Finally, at the joints of the fingers, when the cutis was taken off, a tartareous matter was immediately found, in the membrane involving the tendons; and this matter was of a white colour inclining to yellow.

3. We may not only make many deductions from this obſervation (a method which will be often follow'd in this letter and others) but we may, in

particular, confirm that which often occurs in the practice of medicine; I mean, that to pains of the joints, are often added pains of the kidnies; and at length to the latter, very violent diſorders of the brain. That is to ſay, they who are ſubject to the gout, as they can uſe motion of the body leſs in proportion, ſo they proportionably leſs agitate thoſe muſcles, by whoſe motions the contiguous kidnies may alſo be agitated; ſo as to prevent the urine from ſtagnating therein, and depoſiting the ſandy particles, wherewith it is loaded. Turn to Boerhaave (*a*), and his illuſtrious pupil Haller (*b*), who rightly interprets the ideas of his maſter, and illuſtrates them. See, alſo, the obſervation of Littre (*c*) on a boy, who having a phimoſis that prevented his urine from being properly diſcharg'd, this fluid, for that reaſon, ſtagnated betwixt the glands and the prepuce, and produc'd an incredible number of ſmall ſtones; none of which was any more produc'd, after the phimoſis was remov'd.

But as, when a calculus is already form'd in the kidnies, an obſtacle frequently happens, from thence, to the urine, and leſs ſuperfluous ſerum is, for that reaſon, diſcharg'd from the conſtitution; ſo this ſerum may be redundant in the brain: or even the roughneſs of the calculus, by very vehemently irritating the kidnies, may ſometimes excite convulſions in the whole body; and, therefore, in the brain, as well as in other parts. However, by which method you chooſe to explain the convulſive motions, in the prieſt in queſtion, or even death itſelf, I leave entirely to your own diſcretion: although the diſcharge of a mucilaginous matter, from the urinary paſſages, which was ſucceeded by the convulſions and death, ſeems to give great countenance to the ſecond ſuppoſition.

That is to ſay, this mucilaginous humour, with which the pelvis, and the tubuli belonging thereto, that receive the papillæ of the kidnies, are, like the bladder and ureters (inaſmuch as they are made up of the ſame continu'd coat) ſmear'd over internally, in order to defend them againſt the acrimony of the urine; this humour then being increas'd, and become thicker, from the irritation of the calculus, diminiſhes the force of that irritation, as long as it adheres to the calculus, and interpoſes itſelf betwixt the rough ſurfaces thereof, and this internal irritable coat. But when this mucilaginous humour has left the coat without defence, in conſequence of being forc'd down, by medicines improperly given to increaſe the urinary diſcharges; or from any other cauſe whatever; it muſt then, of courſe, follow, that the irritations are more violent. But you will, in my opinion, chooſe rather to make uſe of the firſt explication, in the hiſtory which I ſhall next ſubjoin.

4. A man about ſixty years of age, of a very fat habit of body, who, while he was a young man, had been troubled with great difficulty in making water; ſo as to be oblig'd to ſtand on tip-toe, ſometimes, to diſcharge it; had his urine wholly ſuppreſs'd, together with a very violent pain in the loins, but without any vomiting. He had, every day, a very conſiderable fever, the rigor and coldneſs laſting for two hours. When the catheter was intro-

(*a*) Prælect. ad §. 352. inſtit. & ad §. 365. (*c*) Hiſt. ad l'Acad. R. des ſc. a. 1706. obſ.
(*b*) Not. *e* ad primum. & *d* ad alter. cit. anat. 6.
Boerhaav. locum.

duc'd

duc'd he diſcharg'd a bloody matter, and with it a calculus of the bigneſs of a ſmall almond. This was ſucceeded by bloody urine. But afterwards, the urine grew clear, and became like that of healthy perſons; yet was not without a fœtid ſmell: and the pain in the loins always continu'd. The diſeaſe having apparently remitted, as I have ſaid, the patient was ſeiz'd, on the night of the fifth day, with a kind of epileptic concuſſion, as it were, of the whole body, attended with a bloody foam at the mouth; and in this manner departed out of life.

The belly being laid open, the bladder appear'd to be full of urine, which was in a natural ſtate, except that it had a very ill ſmell. The fleſhy fibres of the bladder were become much thicken'd, ſo as to reſemble the bundles of muſcular fibres in the heart. About the cervix thereof, were found ſome grains of ſand. However, there was no obſtacle found in the bladder, whereby the diſcharge of the urine could be prevented. The ureters and the kidnies were perfectly ſound.

In the thorax, the lungs were turgid, and ting'd of a black colour: but the left lobe adher'd cloſely to the diaphragm. The right ventricle of the heart contain'd a polypous concretion; the left was full of a fluid blood.

5. Whatever had been, formerly, the cauſe of that difficulty in making water, from whence it is probable, as will be demonſtrated on a future occaſion (*d*), that the thickneſs of the fibres of the bladder was brought on; the laſt diſeaſe, that relates to the urinary parts, ſeems to have been the effect of the calculus. For this might be ſo much the more eaſily generated, in one or other of the kidnies, as the weight of fat, in a very bulky man, render'd exerciſe of body leſs eaſy (*e*). To this method, by which Boerhaave (*f*) ſuppos'd a ſtone to have been form'd, in one of the kidnies of a very fat man likewiſe (for both of theſe viſcera are not always equally diſpos'd to this concretion) you may alſo add another; which, with the ſame author (*g*), you will attribute to a quantity of fat, preſſing upon the kidney, and the ureter; and, for that reaſon, retarding the courſe of the urine, juſt as the want of exerciſe retards it.

Indeed, in thoſe perſons who eat very plentifully, and very often, and have their ſtomachs, and inteſtines, for that reaſon, generally diſtended with too great a quantity of ingeſta; to the other cauſes, whereby they become ſubject to calculi of the kidnies, add this in conjunction with me, that the kidnies, and particularly the left, and both the ureters; inaſmuch as they are ſituated betwixt the poſterior paries of the belly, and thoſe viſcera; are more than properly compreſs'd. And this cauſe being added to thoſe other cauſes, in the gentleman whom Scroeckius (*h*) deſcribes, it is ſo much the leſs to be wonder'd at, that in one ureter was found a calculus of a conſiderable ſize; and in the oppoſite ureter, a very large one, with ſo many ſmaller calculi. But the compreſſion, either from a quantity of fat, or ingeſta, is ſo much the more noxious in very bulky conſtitutions, becauſe they generally lie on their backs: which ſituation of body lays both the kidnies, and the ureters, under a neceſſity of being more compreſs'd, by the incumbent weight of viſ-

(*d*) Epiſt. 42. n. 33.
(*e*) Vid. ſupra n. 3.
(*f*) Ad §. 365. ibid. cit.
(*g*) Ad §. 387.
(*h*) Act. n. c. tom. 1. obſ. 247.

cera;

cera; and the more frequent, and long-continued, this poſture of body is, ſo much the more is the deſcent of the urine prevented.

Thus likewiſe, when you read a certain obſervation of the celebrated Fantonus (*i*), on a man ſubject to nephritic pains, eſpecially in the left ſide, and whoſe left kidney, which was twice as thick as it naturally is, and contain'd two calculi, was cover'd over "with a certain concreted matter, ſimilar to lard, in "one part as thick as ones little finger is broad, and, in another, thicker "than a man's thumb;" which, however, did not cover the other kidney; you will, without doubt, readily ſuppoſe the fat to have been injurious in that caſe. In our man therefore, to whom I now return, the calculus, which was already generated, might bring on both the pain of the loins, and the ſuppreſſion of urine; either by ſhutting up the upper part of the ureter, or the beginning of the urethra.

For although it does not always happen, yet frequently it does at leaſt, that when one kidney is affected, the other is alſo drawn into conſent. And when the calculus was remov'd, by the force of the incumbent urine, and thruſt down into the lower orifice of the bladder, the pain of the loins might continue, nevertheleſs, in the ſame manner that the pain of the kidnies is, ſometimes, wont to be extended towards the bladder; that is to ſay, by means of the ureters, which are, on one hand, continued to the kidnies, and, on the other, to the bladder: and, when the bladder can admit no more urine, are themſelves diſtended therewith. And though this urine ſhould be drawn off, by the introduction of a catheter, yet how ſoon it would fill the bladder again, the inſpection of this bladder, after the death of the patient, demonſtrates.

But if you imagine that, becauſe the ureters ſeem'd ſound, no calculus, except a very ſmall one, had pervaded them, and they had not been diſtended with urine; although not only the calculus was ſmall, but the diſtention of ſhort continuance; yet you may eaſily conceive of their being affected, by the calculus ſo far irritating the upper part of the urethra, into which it had been thruſt, that the blood, in the firſt place, afterwards pus, and, laſt of all the ill ſmell, with which the urine was infected, ſeem to have been owing thereto; ſince we are not at liberty to ſuppoſe the blood, or the pus, to have been diſcharg'd from any other part but the urethra, though we do not read of its having been laid open.

Nor do we read that the brain was examin'd, into which it is to be ſuppos'd that, upon the ſuppreſſion of urine, the impure ſerum had been diſcharg'd from the blood; and, being grown acrid by a ſhort delay, had brought on that epileptic concuſſion and death, juſt as it did, in my opinion, in the two perſons, whoſe hiſtories you have in the twenty ſecond ſection of the Sepulchretum (*k*); which you ſee I here follow; and who died, in like manner, from ſtones of the kidnies, and a ſuppreſſion of urine, not without convulſions; to omit many other examples of an apoplexy itſelf being brought on by a ſuppreſſion of urine, and particularly that of Koenigius (*l*), in a ſenator whoſe ureters were obſtructed with calculi, and whoſe kidnies,

(*i*) De obſ. med. & anat. epiſt. 8. n. 14.
(*k*) L. 3. obſ. 2. & obſ. 13. §. 1.
(*l*) Lithogeneſ. human. ſpecim. epiſt. 2.

but the right in particular, were much enlarg'd beyond their natural ſize, and contain'd a great quantity of ſmall ſtones adhering to ſeveral parts; their coats being dilated, and tumid with a great quantity of ſerum.

6. As it has been juſt ſhown that a pain may be propagated from the bladder to the loins, it would be proper to add, on this occaſion, other obſervations of Valſalva's, which jointly demonſtrate the ſame thing to have proceeded from ſome other cauſe; if it did not ſeem neceſſary to ſhow, before we quit the ſubject of the kidnies, that the pain of theſe parts, and conſequently of the loins, is ſometimes to be imputed to a cauſe which lies in the kidnies, indeed, but is not a calculus. A very extraordinary, but not incredible cauſe, is that of worms, which have been found, not only in the kidnies of dogs, but in thoſe of men alſo, by many whom Dominicus de Marinis (*m*) ſpeaks of by name; to whom, being in great part taken notice of in the Sepulchretum alſo (*n*), you may add ſome others refer'd to in the ſame book (*o*); and thoſe, beſides, that are written of by Valliſneri (*p*), or by Alghiſi (*q*) to Valliſneri, but particularly after Redi, Valliſneri himſelf, and Charles Drelincurt (*r*).

Yet, out of all the obſervers, you will read of very few, and theſe ſuch as were not, generally, very cautious in obſerving, who aſſert that they had ſeen them within the kidnies even of human bodies; ſo that if we did not know that they have certainly been found in dogs, and ferrets or weaſels, we ſhould, perhaps, in part call their obſervations into queſtion, and in part explain them differently; upon calling to mind that oblong and round polypus, which was diſcharg'd from the urethra, after nephritic pains, and had, at firſt, impos'd upon Sponius (*s*), by the appearance of a worm. In proportion, therefore, as the number of certain obſervations is more increas'd in dogs, it becomes ſtill ſo much the more credible, that the ſame thing may happen in men alſo. With this view I ſhall deſcribe what was ſeen by Valſalva, much in the ſame manner as happen'd to the illuſtrious Van Swieten (*t*) alſo.

7. Valſalva had open'd a dog, for the ſake of anatomical experiment, when inſtead of the right kidney, he found a body which, externally indeed, was very much ſimilar to the kidney, but had a thin glandular cortex beneath the external membrane; to which ſome ſanguiferous veſſels were carried; and under this cortex a cavity, inveſted with a very ſmooth membrane, pierc'd through with many foramina, which went to this cortex; ſo that the urine ſeem'd to flow from thence, through theſe foramina, into the cavity. In this cavity lay a worm about three ells long, and of the thickneſs of one of the largeſt quills which we uſe for writing.

8. Redi (*u*), indeed, found worms in the kidney, that were thicker than this, but not equally long. Kerckringius (*x*) and I have found them of an ell in length, Valliſneri (*y*) four ſpans, and Drelincurt longer than two feet; ſo that for the length of an animal, which was not very thick, to be equal

(*m*) Diſſert. de re monſtr. a Capuc. & cæt.
(*n*) Sect. hac 22. obſ. 23. §. 5. & in ſchol.
(*o*) Ibid. & in additam. ad eand. ſect. obſ. 2.
(*p*) Conſideraz. int. alla generaz. de' Vermi.
(*q*) Opera del Valliſn. tom. 1. p. 5.
(*r*) Experim. anat. canicid. 3. n. 10. & 16. & canicid. 11. n. 36.
(*s*) Act. erud. Lipſ. a. 1684. m. jun.
(*t*) Com. in Boerhaav. aph. §. 1134.
(*u*) Oſſervaz. int. agli anim. viv. & cæt.
(*x*) Spicileg. anat. obſ. 59.
(*y*) Conſider. cit.

to

to about three ells, may ſeem very ſurprizing, unleſs it be much increas'd after death; as I have obſerv'd to happen in another ſpecies of worms (*a*); and as Redi has obſerv'd may eaſily happen in this; or unleſs, as you have it in Drelincurt (*b*), there were two, and one had its roſtrum or ſnout very cloſely fix'd about the tail of the other.

For there are two in one kidney, ſometimes, of unequal length indeed (*c*), as Redi has alſo obſerv'd (*d*); but they are repreſented of an equal length by Blaſius (*e*), and theſe from an emaciated man: of which kind we read in Zacutus (*f*) that another was, in whoſe kidnies worms, of a white colour, are ſaid to have been, but very conſiderably ſhorter; whereas they were red in the obſervation of Blaſius; which is the ſame colour that they have been always ſeen to be of in dogs, both by Redi, and Drelincurt: the former of whom ſometimes found them alive, the latter always dead; the one only in males, and on the right ſide, the other in a woman alſo, and on the left ſide. Zacutus has ſaid that there were very ſevere pains in the loins: which Kerckringius, and Boirelius (*g*) teſtify even to have been ſignified in dogs, by a perpetual howling; whereas the others, whom I have mention'd by name, ſay nothing of it.

As to what remains in reſpect to the origin of theſe worms; as, for inſtance, whether thoſe in dogs are of that rediſh kind which I have deſcrib'd formerly (*h*), as being ſometimes found in certain tubercles, not far from the kidnies, and which have ſometimes paſs'd over into the kidnies, after the tubercles were eroded; in ſo great an inequality of length it is not eaſy for me to determine, unleſs I were, previouſly, more certainly inform'd of the ſtructure of each. Blaſius, indeed, has deſcrib'd, and repreſented in a figure, the renal worms found by him, as conſiſting "of a great number of ſmall rings, "curiouſly join'd together;" but I ſhould ſuppoſe that the engraver had added a double head, and eyes, to that picture, from his own imagination. Valliſneri obſerves that the one he ſaw was not of the broad-worm ſpecies, as it was rather round; but yet that it was not of any different kind, which other authors, as far as he knew, had ever found to be contain'd within the inteſtines.

This remark of Valliſneri renders the account of their ſtructure, given us by Redi, very doubtful; inaſmuch as he repreſents it to be almoſt in common with the round worms of the inteſtines, as deſcrib'd by this very author himſelf; to paſs by thoſe circumſtances, which Valliſneri (*i*) has remark'd to differ entirely from this deſcription. But though all the circumſtances, relating to renal worms, ſhould be pretty certain and conſtant, yet the ſmallneſs of thoſe which are in theſe tubercles of dogs, would render the neceſſary compariſon of their internal ſtructure very difficult. Leaving this labour, however, to others who have more leiſure upon their hands than I have, I go on, in the mean while, as I have promis'd, to other hiſtories of Valſalva,

(*a*) Epiſt. anat. 14. n. 47.
(*b*) Canicid. cit. 3. n. 16.
(*c*) Ibid. n. 11.
(*d*) Oſſervaz. cit.
(*e*) P. 6. obſ. med. 12. tab. 9. fig. 6 & 7.
(*f*) Sepulchr. ſect. hac. 23. obſ. 23. §. 5.
(*g*) In additam. ad eand. ſect. obſ. 2.
(*h*) Epiſt. anat. 9. n. 44. & ſeq.
(*i*) Miglioramenti d'alcune oſſervaz. del. Redi n. 13.

wherein he has obſerv'd the pain of the loins from cauſes ſituated on the outſide of the kidnies.

9. A virgin, of about four and twenty years of age, falling from a high place, was ſeiz'd with an oppreſſive pain in her loins, and a fever. Both of theſe ſymptoms grew ſomewhat mild. But both of them grew violent again after ſome days; a ſenſe of weight in the cavity of the abdomen being alſo added; together with a vomiting of a matter ſometimes green, and ſometimes blackiſh; the ſame being diſcharg'd downwards by ſtool; and in this manner ſhe died.

While the belly was open'd a ſanies immediately flow'd out, which being collected in ſponges, weigh'd, when put all together, about eight pounds. The inteſtines were connected, one to another, by the external coat, yet in ſuch a manner that a pretty thick ſanies lay hid in their interſtices. However, the inteſtines themſelves, and the ſtomach, ſhow'd no diſorder internally. The liver was whitiſh, and had a very thick ſanious matter adhering to it externally. But the omentum being annex'd to the peritonæum on the left ſide, towards the iliac region, diſcover'd an ulcer in that part.

10. Whatever the reaſon was, why the internal paries of the belly, towards the iliac region, was hurt by that fall, there, without doubt, ſo large an abſceſs was generated, as to diſcharge this great quantity of ſanies. When pus is form'd, that happens which we learn from the aphoriſm of Hippocrates (*k*); I mean that "pains and fevers" naturally become ſomewhat milder. But the freſh exacerbation of theſe ſymptoms ſignified the rupture of the abſceſs; as the effuſion of pus into the cavity of the belly was ſhown by the ſenſe of weight in that cavity. But you will not enquire after the cauſe of pain in the loins, when you call to mind the ſeat of the abſceſs; as it was in that part of the abdomen, which verg'd to the iliac region; for the fibres of the tranſverſe muſcles, which are in this very part, take their origin, as you very well know, from the vertebræ of the loins: and that pains ſhould be felt at the extremities of the muſcles (eſpecially when they are tied very ſtrongly to the bone) when their fibres ſuffer diſtraction, and eroſion, need not be any great matter of ſurprize.

11. Being about to add, in this place, other obſervations of Valſalva, of pains raging in the ſame place, even from a cauſe plac'd on the outſide of the belly and abdomen, it comes into my mind, that I have already deſcrib'd them to you, in a former letter (*l*); and that from the connexion of the appendages of the diaphragm, the action of a cauſe, which lay hid in the thorax, I mean its action upon theſe appendages, was explain'd: to which claſs alſo, perhaps the obſervation of Jacotius, that is to be met with in one of the following ſections of the Sepulchretum (*m*), belongs. And if a cauſe that lies on the outſide of the cavity of the belly, is able to do this; how much more will thoſe, which lie either in the loins themſelves, or in ſome part of the belly that lies near to the loins, or is connected to them, be able to effect the ſame?

You will ſee theſe cauſes particularly and fully recounted, in the Encheiridion of Riolanus, in that chapter from whence they are transfer'd into this

(*k*) 47. ſect. II. (*l*) Epiſt. 16. n. 40 & 41. (*m*) 25 obſ. 14.

twenty-

twenty-ſecond ſection of the Sepulchretum, in the ſcholia to the firſt obſervation which is mark'd with the number thirty-eight; for the ſame number is through careleſſneſs repeated: and you will ſee moſt of them confirm'd, in the ſame ſection, by examples; as from a rheumatiſm of the loins, in obſervation the twenty-ninth; from ſerum in the tube of the lumbar vertebræ, in obſervation the thirty-third: from the eroſion of theſe vertebræ, in obſervation the thirty-fifth, and fortieth: from ſmall ſtones, or if you chooſe rather to have it ſo, from ſmall bones in the lumbar arteries, in obſervation the thirty-firſt: from diſorders of the meſentery, in the ſecond thirty-eighth obſervation, the thirty-ninth, and forty-firſt, article the firſt, ſecond, fifth, ſixth, and ninth, and obſervation the firſt in the additamenta: from diſorders of the uterus, in obſervation the forty-firſt, article the fourth: from an ulcerated ſcirrhus of the inteſtinum ileum, in obſervation the thirty-ſecond: and, to omit others at preſent, from diſorders of the pancreas, in obſervation the twenty-fifth, and the ſecond thirty-eighth, and in the forty-firſt, article the third: and I ſhould likewiſe add article the ſeventh, if it were not the ſame; as article the ſixth and eighth are the ſame with thoſe obſervations that are juſt now refer'd to; the twenty-fifth, and thirty-eighth; which are here repeated through forgetfulneſs. And the pancreas not only affects the neighbouring vertebræ, even of itſelf, but more frequently than many phyſicians imagine; as is rightly obſerv'd by Franciſcus Sylvius (*n*); by the juice which it then ſends, in a preternatural ſtate, as the liver does alſo, into the duodenum, that lies in contact with, and connected to, the ſame vertebræ, and the right kidney; from whence ariſes a various ſenſe of pain in many of theſe vertebræ, but particularly a ſenſe of burning pain; which is frequently imputed to the kidnies, without any cauſe.

But we muſt now return to the kidnies themſelves, and firſt as being affected with calculi, if you are willing I ſhould communicate to you my own obſervations, in the ſame order I have communicated Valſalva's, according to my promiſe: altho' as thoſe which are more remarkable, are to be defer'd to other letters, for certain reaſons, as you will then ſee, I ſhall here ſubjoin one only; which, though deficient in the hiſtory of the peculiar ſymptoms that had preceded, is not altogether without its utility nevertheleſs.

12. A woman had died in the hoſpital at Padua, when ſhe was already in the ſeventh month of her pregnancy; it being then the month of March in the year 1708.

The belly therefore, and the uterus, were immediately open'd after death, and the fœtus taken out alive, though it died ſoon after; at which time, happening to be at Padua, I took the cervix of the uterus, which was even then ſound, and the kidnies, in order to make ſome accurate obſervations upon them. It is to little purpoſe to take notice here at large, of a quantity of mucus within the cervix uteri, and of veſicles which were pregnant therewith, very conſpicuous both in number and magnitude, that cover'd the ſurface of the os uteri. But the kidnies deſerve to be deſcrib'd.

For the left, being larger than the magnitude of body requir'd, ſhow its ſmall canals to be thicker than they generally are; and, for that reaſon,

(*n*) Vid. extrema ſcholia ad cit. obſ. 38. primam.

very evident to all thoſe who happen'd to be preſent: on the other hand, the right was ſo much diminiſh'd in its ſize, as not to exceed the bigneſs and thickneſs of the ren ſuccenturiatus; and to the ſmalineſs of this kidney, the ureter, and the emulgent veſſels, correſponded. And that you may not ſuppoſe it to have been thus from the original formation of the body, it was of a colour which ſhow'd it to be morbid; and had ſtill the tubuli which are wont to receive the papillæ, but contracted in their diameter, and the remaining ſubſtance reduc'd almoſt to nothing: ſo that if you took away a calculus, which was not at all red, and not at all of a ſaffron colour, and which lay in the kidney, and a calculous matter here and there, ſcarcely any thing would remain.

13. As to what I have ſaid, that this obſervation could not be without its utility; I would have you underſtand it in ſuch a manner, as to ſuppoſe that it gives us occaſion of examining many things which have been aſſerted by phyſicians, when they have treated of calculi, and other diſorders of the kidney; as appears even from that twenty-ſecond ſection of the Sepulchretum.

And firſt, although it happen'd to Coiterus *(o)* to find "the right kidney "more liable to ulceration than the left," and tho' it happen'd ſo in our woman alſo, yet if you run over this whole ſection, you will find that out of the kidnies, the ſubſtances of which had been ulcerated, or conſum'd, the number is greater on the left ſide, than on the right: and indeed if the more frequent cauſe of ulceration is to be ſought after in calculi, theſe are, in the opinion of Boerhaave *(p)*, leſs frequent in the right: nor have learned men fail'd to aſſign a reaſon for this difference *(q)*; I mean, becauſe the blood is carried back, from the right kidney, much the moſt eaſily, on account of the emulgent vein being ſhorter, and more at liberty.

And though different authors have accounted for it differently, yet in the fact itſelf all agree; as Frederic Hoffmann *(r)*, and ſtill more Carolus Piſo *(s)*, whom he quotes, and who ſays, in expreſs words, that "out of a hundred who labour under a nephritis from calculi, more "than eighty are "affected in the left kidney, as is prov'd by experience;" or indeed "in al-"moſt all nephritic patients; .... which is," ſays he, *(t)* "an obſervation "made by Dodonæus, as well as by myſelf."

Therefore, although in turning over thoſe of the volumes of the Cæſarean Academy, from which I am wont chiefly to take examples in theſe letters, you will light on ſome obſervations, that either deſcribe *(u)* both of the kidnies, as equally conſum'd, internally, from calculi; or *(x)* the right only as being oppreſs'd with them; or *(y)* if both of them, the right by far the moſt; yet you will have ſo many of the others, that are proper to be oppos'd to theſe, and indeed ſome out of the ſame volumes; as, for inſtance, where *(z)* they deſcribe calculi in the left kidney only, or, if in both of them, ei-

(o) Obſ. 23. §. 3.
(p) Prælect. ad inſtit. §. 352.
(q) Vid. Haller. not. *g* ad eund. loc.
(r) Medic. rat. t. 4. p. 2. ſ. 2. c. 6. in theſ. pathol. §. 6.
(s) Obſ. de morbis a ſer. colluv. ſ. 4. c. 2. poſt. obſ. 100.
(t) In præf. paulo ante theor. 4.
(u) Dec. 3. a. 5. obſ. 33.
(x) Act. t. 1. obſ. 20. & 247.
(y) Cent. 1. obſ. 27. & cent. 3. obſ 45.
(z) Ibid in appen. n. 1.

ther (*a*) more, or (*b*) larger, and such as more considerably affected the left kidney than the right; in one of which observations you will, by the way, remark this, that some parts of those calculi were "of a chrystalline hardness, and a shining smoothness," or "pellucid."

From the same books you will have examples (*c*) of the left kidney only being much increas'd in its size, though internally eroded, or affected with some other disorder, or of the left much more than the right: and these things will be, in like manner, confirm'd by two observations of purulent kidnies, propos'd by the celebrated Coschwitz (*d*). But enough of examples at present: I therefore purposely pass over others (among which is even that refer'd to above (*e*), from the celebrated Fantonus) except one which that author has mention'd (*f*) from the observation of du Verney; as it ought not to be pass'd over, in order that a rare cause of a purulent discharge, by stool, may be understood. That is to say, pus proceeded from the intestinum colon, which was eroded by an ulcer of a neighbouring part. And this part was the left kidney.

From these things that have been said, you see, some advantage may be drawn, when dubious symptoms of a renal disorder discover themselves, as frequently happens. For if to others, this also be added, that they are on the left side, they will become less dubious, than if they were on the right side.

14. Eustachius (*g*), moreover, having found, in Bonifacio Corneo, one of the kidnies to be scarcely equal to a small chesnut in magnitude, and the other large; but the former sound, and the latter purulent, as well as turgid with calculi, and sanious matter; suppos'd that the smallness of the former was owing to a deficiency of blood: inasmuch as this fluid was carried in the greatest quantity into the other, where it was drawn by the force, and stimulus, of the disease. If the small kidney was really sound, and the smallness of it did not hide the traces of old diseases, it is not to be wonder'd at, that this great man was oblig'd to have recourse to that explication.

But others are better satisfied with a contrary explication, where the lesser kidney is morbid, as I am also, in the case of the woman in question. The kidney being contracted, the vessels of it are contracted also, as we have seen in the present case. What blood, therefore, cannot now be carried into this kidney, is diverted into the other by the opposite artery; and, by this unusual flow of blood, the opposite kidney is distended. And I believe that the contraction of the one, and its vessels, and the distention of the other, may be, sometimes, so far increas'd, that the latter may grow out into a very great bulk, and the former may seem never to have existed.

That is to say, the sound kidney, if it be firm, is not more increas'd than the influx of blood requires; which must deposit the same quantity of fluid in one kidney, that was before deposited in both. But if it be pretty lax in its nature, and a disease is added to that laxity, it is scarcely to be conceiv'd how

(*a*) Dec. 3. a. 3. obs. 122.
(*b*) Ibid. a. 7. & 8. obs. 122. cum figuris.
(*c*) Cent. 8. obs. 100. & cent. 9. obs. 64. & act. tom. 7. append. n. 10. & eorund. tom. 8. obs. 89.
(*d*) Dissert. de Valvulis in ureterib. §. 5 & 7.
(*e*) Vid. supra n. 5.
(*f*) Anat. corp. hum. diss. 4.
(*g*) Sect. hac 22. obs. 16.

great

great an increaſe it may ſometimes acquire. This is ſhown by that kidney, which the celebrated Valcarenghus (*h*) found to be ten times larger than its natural ſize, and ſtill more by that which is taken notice of in the hiſtory of the Royal Academy of Sciences at Paris (*i*), and which weigh'd thirty-five pounds; to ſay nothing here of another, which was twice as heavy as the laſt, and indeed more than twice, and which the celebrated Fantonus (*k*) has taken notice of, from the obſervation of Monginotius. On the other hand, I have a ſuſpicion that the kidney has been contracted by diſeaſe, and even ſo attenuated, and conſum'd; in thoſe who have labour'd under pains of the kidney, from calculi, and other diſorders; as to make learned men think that they were originally deficient: as, for inſtance, in a woman, a man, and a girl, whoſe hiſtories you may ſee in the Sepulchretum (*l*). For; to omit the man, I mean that merchant, the obſervation of whom is once and again refer'd to in this ſection, through careleſſneſs; in the girl, although not the leaſt appearance of filaments, or membranes, occupied the place of the right kidney; yet that place was taken up by the ureter, which ſtill went down to the bladder, from the trunk of the vena cava, to which it ſeem'd to have been agglutinated, after the kidney was conſum'd: and in the woman, inſtead of the right kidney, was ſeen "a certain kind of involucrum," the membrane, as I ſuppoſe, which, when the ſubſtance of the kidney is already conſum'd, is taken notice of as remaining behind in the ſhape of a purſe, or bag, by ſuch a number of obſervers (*n*).

But I ſhould ſuppoſe the kidney to have been deficient from the original formation, as Ariſtotle obſerv'd even formerly (*o*), in thoſe perſons where no diſorders of the kidnies have preceded; and no veſtige or traces, either of its emulgent veſſels, or the ureter, exiſts; as was the caſe in the little girl diſſected by Poupart (*p*), and in the prieſt, and woman, diſſected by Valſalva, each of whoſe hiſtories I have already given you (*q*): or if any trace did exiſt, ſome other particular things were not wanting, which ſhow'd that the kidney never had exiſted; as in that woman, the kidney of the other ſide was not only, as in that little girl, larger than it uſually is, but twice as large as its natural ſize: and beſides this, furniſh'd with a double pelvis, and double ureter; ſo that it ſeem'd to have been form'd from the beginning, with an intention to ſupply the functions of its abſent fellow.

In a whelp which I diſſected at Bologna, in the month of February, in the year 1702, I obſerv'd another thing; from whence, although neither the ureter, nor the emulgent veſſels were wanting, I ſhould, nevertheleſs, conjecture the kidney to have been wanting from the original formation. For when, inſtead of the right kidney, I had found nothing but fat, which, in ſome meaſure, reſembled it, both in bulk, and figure; and the ureter, indeed, join'd with the bladder, but ſolid like a ligament; and, a little before it reach'd to that fat, ſuddenly ſeparated into ſlender and pinguedinous ſtriæ,

(*h*) Diſſert. de ſaxis, acub. & cæt.
(*i*) A. 1732. obſ. anat. 7.
(*k*) De obſ. med. & anat. epiſt. 8. in fin.
(*l*) Sect. cit. obſ. 23. §. 4. ſect. 27. obſ. 1. ſect. 28. in additam. obſ. 2.
(*m*) Obſ. 23. §. 12. & obſ. 27. §. 6.
(*n*) Vid. ex. grat. ſect. hac 22. omnes §. obſ. 5.
(*o*) De generat. animal. l. 4. c. 4. art. 2.
(*p*) Hiſt. de l'Acad. R. des ſc. a. 1700. obſ. anat. 1.
(*q*) Epiſt. 25. n. 4. & epiſt. 31. n. 25.

which

which accompanied the ſanguiferous veſſels; and had ſeen that the emulgent artery, in like manner, was not wanting on that ſide, but much more ſmall than it commonly is; and when it had ſent out a branch of no inconſiderable ſize, going away into ſmall ramifications, which only crept through the ſurface of the deſcrib'd fat: when, therefore, I had ſeen theſe things, I obſerv'd that the emulgent vein, on the ſame ſide, although in thickneſs it ſomewhat exceeded the oppoſite, did not, however, receive any ramifications coming from that fat, or at leaſt any that were obvious to the ſenſes; as I examin'd the whole of this pinguedinous body with great care; but that it receiv'd a branch from the neareſt lobe of the liver, ſo thick in its ſize, that even the left emulgent itſelf ſeem'd to be thinner than this.

From this circumſtance it was natural to conjecture, that the right emulgent vein had not been created for the ſake of the kidney, in this whelp, but for the ſake of the liver; eſpecially as it was in a creature who was very ſound, and healthy, and in whom every thing elſe was agreeable to the uſual courſe of nature; except that the left kidney was larger than in proportion to the ſize of the body, inaſmuch as this was under a neceſſity of ſecreting the whole of the urine; for which reaſon the ſmall canals thereof were alſo much thicker, and more evident, as I deſcrib'd in the woman.

15. To return therefore from the conſtitution of theſe parts, which is the effect of original formation, to that which is from diſeaſe, and to the diſcourſe I had begun; I ſhould ſuppoſe that the magnitude of the ſound kidney is increas'd by the waſting of the other, in much the ſame manner as I juſt now advanc'd; for in the obſervations of Kerckringius, for example ſake, or Drelincurt, already taken notice of (*r*); as one kidney was deſtroy'd by a worm, and the other larger than it ought to be; there cannot be room for the explication of Euſtachius.

But as we ſee it ſo often happen, that one kidney not ſecreting, or not emitting, urine, by reaſon of its being corrupted, or on account of obſtructing calculi, is ſupplied by the other, and that this is confirm'd by the very increaſe of it; it is evident that Guy Patin had with reaſon aſſerted, as you will read in the Sepulchretum (*s*), the frequent fallibility of this ſuppoſition, that when one kidney is obſtructed the other immediately ceaſes from its office: which he has alſo prov'd by his own obſervations, and it is eaſy likewiſe to conceive, from the obſervations of ſeveral authors; and among theſe, to omit a great number of others, thoſe of Gregory Horſtius (*t*), and Thomas Bartholin (*u*).

If in reading over the hiſtories of Guy Patin, and Bartholin, you ſhould be ſurpriz'd that, although there was a large and angular calculus in the kidney, no pain had been wont to be perceiv'd there; you will be ſurpriz'd ſtill more, if you look into other obſervations, from which it appears, that there neither had been this pain, nor any other of the great number of ſymptoms attending renal calculi, through the whole courſe of life, in ſome perſons who had theſe calculi; ſome of which obſervations are in the ſame part of the Sepulchretum (*x*), where thoſe are that I refer'd to from Bartholin; but

(*r*) Supra, n. 8.
(*s*) Sect. hac. 22. in ſchol. ad obſ. 14.
(*t*) Ibid. obſ. 19.
(*u*) Ibid. obſ. 24. §. 2.
(*x*) Obſ. ead. §. 1. 3. 4.

others may be added beſides; as, for inſtance, that which is extant in the hiſtory of the Royal Academy of Sciences at Paris (*y*); although in this man, nevertheleſs, vomitings were not wanting, wherewith he was attack'd at intervals; and that, in like manner, which I am ſurpriz'd has not been already added, inaſmuch as it was publiſh'd in the poſthumous work of Malpighi (*z*).

But the cauſe why ſome one ſymptom only, and ſometimes none appears, may indeed be manifold; as, for inſtance, when ſtones, although of a conſiderable magnitude, are naturally, or by chance, "pierc'd through in the middle like a ring" (for thus we ought to read the words of Euſtachius, which are transfer'd into the Sepulchretum (*a*), in an improper manner, where they are confirm'd by an excellent obſervation of the ſame author's) a ſuppreſſion of urine does not happen, as it will not happen likewiſe, if a paſſage for the urine, through ſmall canals, as it were, in the ſides of the calculi themſelves, be left open; as appears in the next hiſtory of Salmuthus (*b*), and ſtill more clearly, as the deſcription is illuſtrated by a figure, in that which Lanciſi communicated to Alghiſi (*c*). Nor will there be a troubleſome ſenſation in the loins, not even of heavineſs, if the calculi increaſe gradually and ſlowly, and have not ſharp angles; or if they adhere ſo cloſely, and are ſo wedg'd in, to the ſubſtance of the kidney, that they cannot be mov'd; eſpecially if that ſubſtance be hard and callous, as I ſhall tell you, hereafter (*d*), that it was in the cardinal Corneli; and as it was alſo in that man of whom I made mention juſt now, from the hiſtory of the Royal Academy of Sciences, in whom it was found to be cartilaginous.

But it was alſo hard, in another whoſe deſcription I have ſaid is extant in Malpighi. And in theſe there are, in general, no other marks of that diſeaſe. And what was the cauſe of this circumſtance in him whoſe obſervation is given by Guarinoni (*e*), does not ſufficiently appear from the diſſection; as it likewiſe does not in two others (*f*), and in the firſt, in particular; both of which, nevertheleſs, ſhow each of the kidnies to have been ſtuff'd up with calculi, and particularly the left. Yet what, and of what kind, thoſe marks are, for the moſt part, wont to be, from the preſence of which, calculi of the kidnies are properly diſtinguiſh'd, although you know very well of yourſelf already; it will, nevertheleſs, be of uſe to enquire, over again, in the writings of the celebrated Scharſchmidius (*g*); for he ſubjoins examples by which he confirms, that moſt of them, or even all of them, may be abſent ſometimes, ſo that the phyſicians may have an eye to another diſeaſe, and may by no means ſuſpect that calculi are in the kidnies.

Moreover, it is needleſs to admoniſh, that cauſes may ariſe, on account of which, the pain that was before even very ſharp, in the kidney, may ceaſe: that is in conſequence of the ſmall nervous branches being either become incapable of feeling acutely, or being conſum'd; as is underſtood from the ſixth obſervation of this ſection. And as this is the ſtate of the queſtion,

(*y*) A. 1730. obſ. anat. 3.
(*z*) Ubi de renib.
(*a*) Sect. cit. obſ. 12. §. 1.
(*b*) Ibid. §. 2.
(*c*) Lithotom. c. 4. & tab. 4.
(*d*) Epiſt. 57. n. 10.
(*e*) Sepulchr. l. 2. ſ. 1. in additam. obſ. 10.
(*f*) Act. n. c. tom. 2. in append. n. 3. & Commerc. Litter. a. 1745. hebd 11. n. 1.
(*g*) Ibid. a. 1739. hebd 31. n. 1.

it appears of how much importance it is to enquire what ſymptoms have preceded in patients; and if, at any time, no peculiar ſymptom of a renal calculus exiſts, not for that reaſon to deſpiſe the ſlighter ſymptoms, or thoſe which are alſo common to other diſorders. But my obſervations of this diſeaſe being found in dead bodies, will better teach us this, though they are defer'd to other letters for this reaſon; becauſe it does not ſeem ſo proper to give them here, where the queſtion is of pain in the loins; as, in theſe patients, no pain of the loins had diſcover'd itſelf.

16. But as to what I have ſaid, that, in the kidney of the woman deſcrib'd by me, the calculus was neither of a ſaffron colour, nor red; and as to my having taken notice to you, in another letter (*b*), that three white ones were found by me; it is, without doubt, contradictory to that diſtinction, which was formerly receiv'd by every-one; ſuppoſing that ſtones generated in the kidnies, were to be known from thoſe generated in the bladder by one or other of theſe two colours. To whom, you ſee in the Sepulchretum (*i*), that Euſtachius has objected this obſervation: and from the Sepulchretum, alſo, you will add others; as out of thoſe which are at hand, another next to that of Euſtachius (*k*), wherein they are deſcrib'd as being of the colour of white marble; and another (*l*), wherein calculi, found in the kidnies, are ſaid to be of a ſnowy whiteneſs: where ſome have been ſeen by Valſalva, of a white colour (as they were alſo by Schroeckius (*m*)) which I have taken notice of in another letter; and ſome of a black colour, as I have taken notice in this very letter (*n*).

It appears, therefore, that this diſtinction has either been taken from too ſmall a number of obſervations, or from ſome prejudg'd opinion. And, certainly, that ſtony matter by which it is ting'd with a red, yellow, black, or any other colour, may be mix'd with it when it is in the bladder. From which variety of mixture, it is to be ſuppos'd that the different facility, or difficulty, of ſolution, in different ſtones, happens; and that, for this reaſon, all hope is taken away from thoſe perſons who enquire after a remedy, by which they may be all equally diſſolv'd. And we ought, for this reaſon, to take the greater pains to prevent a calculus being generated, by avoiding thoſe things which I have ſaid (*o*) tend to retard the urine in the kidnies, and by making uſe of the contrary, eſpecially if there be any ſuſpicion of a calculus being begun. In order to remove which, while it is poſſible, I would rather uſe the more mild diuretics, and ſuch as have ſomething of an anodyne nature, than the more acrid ones; as on the one hand, I remember, that before the Monita of Boerhaave (*p*) came forth, a certain gentleman, a fellow citizen of mine, who had had a ſtone cut out from his bladder, and who was ſubject to nephritic pains, began to be leſs frequently attack'd therewith, from the time that he determin'd to drink, on every third or fourth day in the morning, ſome ounces of warm water, with the addition of a ſpoonful of ſyrup made from the juice of violets; and as, on the other hand, I know that diuretics, properly ſo call'd, have really freed ſome perſons from the com-

(*b*) Epiſt. 38. n. 41.
(*i*) Sect. hac 22. in Schol. ad §. 1. & §. 2.
(*k*) Ibid. §. 6.
(*l*) L. 1. ſect. 10. in additam. obſ. 8. ad fin.
(*m*) Act. n. c. tom. 1. obſ. 247.
(*n*) N. 2.
(*o*) Supra, n. 3. & 5.
(*p*) Prælect. ad inſtit. §. 365 & 387.

plaints; but have very much hurt others: nor will this be ſurprizing, to thoſe who either attend to what I have hinted above (*q*), of the mucilaginous humour, wherewith the parietes of the tubuli, and the pelvis, are ſmear'd over; and how cautious we ought to be in removing it; or to the contractions of the ſame parietes, which, as they naturally follow the irritation of acrid medicines, it is evident muſt not only aſtringe the paſſages to an improper degree, but greatly increaſe the pains.

I could wiſh the anodyne virtue of the ſquil, and its power in appeaſing convulſions, hinted at by Hoffmann, and aſſerted by the celebrated Jo. Gerard Wagner (*r*), in the nephritis itſelf; even when proceeding from ſmaller calculi; were confirm'd by a great number of other ſucceſsful experiments; ſo as to be not leſs known among phyſicians, than the diuretic property thereof: for certainly our Italians alſo, notwithſtanding they are, in general, averſe to the uſe of emetic medicines, ſuch as the pulvis ſcilliticus is, would not be in doubt to make a proper uſe of it, in order to prevent a calculus from increaſing in its ſize, in a part from whence it could not afterwards be diſcharg'd. For by remaining there long, it is ſo increas'd, as not only to be too large for being diſlodg'd, and got rid of, but even, ſometimes, ſo as to equal the kidney itſelf in ſize; and it has been known, more than once, to have been of the weight of five pounds, as it is ſaid to have been in a woman of princely rank (*s*). But as, in other diſorders, the ſame remedy has not the ſame effect, at all times, ſo in this does it happen thus in particular. At leaſt, I remember Valſalva to have complain'd of this more than once; and to affirm that, in the caſe of a noble virgin, who had been troubled, for the ſpace of two years, with pains of the kidnies, he was oblig'd to change his remedies in every paroxiſm; ſince thoſe which had given her immediate relief before, were applied to again without effect.

17. Among the other miſchiefs, which nephritic tortures bring to women, I do not doubt but abortion, or even the death both of mother and child, ought frequently to be reckon'd. For as the increaſing uterus, by preſſing the ureters, renders the deflux of the urine through them leſs eaſy, and conſequently ſomewhat delays it in the kidnies; if it happen that any woman has a diſorder in theſe parts, which makes her ſubject to pains thereof; it is without doubt very natural to ſuppoſe, that their internal membranes are, from thence more irritated, and that tortures are excited; as it is likewiſe to conceive that the whole body, and particularly thoſe parts which lie in the belly, being drawn into conſent therewith, by means of the nerves, the fœtus may eaſily be extruded from the uterus, by the contractions thereof, before its proper time: or at leaſt the fœtus itſelf, or the mother, who are very frequently unequal to the conflict with violent diſorders, may ſuffer very much therefrom; ſo as frequently to make it impoſſible for either of them to eſcape death.

In regard to abortion, you have, in the Sepulchretum (*t*), the hiſtory of the matron deſcrib'd by Platerus. She "having been fourteen times pregnant, had as often miſcarried, in the eighth or ninth month of her pregnancy." The ſame woman had been ſubject, for many years, to the moſt

(*q*) N. modo indicato 3.
(*r*) Obſerv. Clinic. ſect. 2. n. 2. 9 & 10.
(*s*) Vid. apud. Pohl. de proſtat. calcul. §. 7.
(*t*) Sect. hac 22. obſ. 4.

violent

violent pains of the kidnies. And Platerus found " the cauſe of her pains, " and abortion," in the kidnies; one of which was reduc'd into the form of a purſe, by a waſting of its ſubſtance, and the other was very tumid with a large calculus.

And the woman, from whoſe hiſtory I have had occaſion to obſerve this, as well as other things, that ſhe, herſelf, firſt died in the ſeventh month of her pregnancy, and her fœtus alſo ſoon after, and have already ſhown you *(u)* what appearance her right kidney had; gives me at preſent, occaſion to ſuſpect; though, being then buſy about other things, I did not enquire into the nature of her death; that the pain of her kidney had been one of the preceding or proximate cauſes thereof. And this I alſo ſuſpect of another woman, the account of whoſe diſſection was communicated, by Santorini, to me and the reſt of his friends; whoſe obſervation I ſhall the more readily give you here, becauſe it alſo contains ſome other things, which will not, perhaps, be at all diſpleaſing to you, when you enquire into the ſtructure of the kidnies.

18. A woman, who had labour'd under diſorders of the kidnies, being pregnant, at length died in the fifth month of her pregnancy.

One of the kidnies was wrinkled, and contracted; inaſmuch as, notwithſtanding the cavity of the pelvis was dilated conſiderably, the ſubſtance of the kidney, itſelf, was much diminiſh'd in thickneſs. The ſubſtance of the other likewiſe, although increas'd in length, and breadth, had a very inconſiderable thickneſs in ſome parts, though the pelvis was extremely enlarg'd. But this pelvis terminated in a ureter, of ſo narrow a dimenſion, that it was ſcarcely poſſible to force any air through it. And where the pelvis coher'd with the internal part of the kidney, it was pierc'd through with wide orifices, which communicated with large cells. One of theſe cells, alſo, had its parietes perforated with other orifices; into which the air being driven, diſtended a great number of the ſmall canals, and the emulgent artery at the ſame time. And theſe ſmall canals were plac'd upon the arterial branches tranſverſly. However, theſe cells were fill'd with urine; but the ſurface of the kidney was made up of ſanguiferous veſſels, compacted, as it were, into a kind of thickiſh ſtratum.

19. They who do not entirely deſpiſe making uſe of morbid conſtitutions of the viſcera, and the kidnies among others, to diſcover the ſtructure thereof, will not, perhaps, make light of this; from whence they will, probably, ſuppoſe it to be prov'd that the ſmall canals, or tubuli, of the kidney communicate immediately with the artery; whether with juſtice, or not, it is not the proper place for inquiring here, nor for confirming an experiment which I formerly thought of *(x)*, in order to diſcover the ſtructure of the kidnies.

From this hiſtory, and others, taken notice of above, I rather recal another to mind, which you will find in the Sepulchretum *(y)*, being transfer'd thither from Willis. In this obſervation a matron is deſcrib'd to us, who had been troubled for many years paſt, but particularly when ſhe had conceiv'd, with ſpaſmodic affections; in conſequence whereof ſhe always miſcarried about

(u) N. 12.

(x) Adverſ. anat. 3. animad. 33. vid. et epiſt. anat. 3. n. 15.

(y) L. 1. ſect. 13. obſ. 7.

the end of the third month, which had happen'd lately alſo; that is to ſay, by reaſon of acute pains frequently returning, eſpecially in the loins, and theſe troubling her afterwards, alſo, in a violent manner, and being attended with a vomiting, even almoſt to the very laſt day of her life, which was the thirty-fifth day after miſcarriage. When the body was diſſected, and examin'd, Willis did not doubt but the cauſe of the pains had conſiſted in water found within the cranium, which had fallen down from thence, through the nerves, into the center of the meſentery, and torn aſunder the membranes, which he found to be ſeparated from each other, in that part, by interpos'd air, juſt as if they had been blown up by a butcher.

I confeſs I am not one of thoſe who deny that water, overflowing the brain, may excite ſpaſmodic pains. Yet it is, nevertheleſs, more natural to conceive that in a body, which he ſays had very ſoon putrefied, this air that was interpos'd betwixt the membranes, had rather been recently extricated by putrefaction, than that it had exiſted in the living body. What are we then to ſuppoſe? Perhaps another cauſe might have been found in the kidnies, that you might have added to this water. For he ſays that the kidnies were pretty ſound; but that one of them "was of an unuſual figure," inaſmuch as "it was divided into many lobes, like the kidney of a calf." For call to mind what Ruyſch (*z*) ſays he had met with more than once.

After intolerable pains of the loins, he found, inſtead of calculi, which he and every one expected, only an unequal ſurface of the kidnies, as in human fœtuſſes, in calves, an in oxen. And he confeſſes that, as the circumſtance itſelf was new and unheard of to him, ſo alſo he had not found out, by what means ſo violent a pain, and a frequent diſcharge of bloody water, could ariſe from a ſtructure of this kind. For although this diſcharge of bloody water is not mention'd by Willis, yet that internal diſorder of the kidney, which would either be the effect, or the cauſe, of this inequality of ſurface, might not as yet have reach'd to ſuch a height, as to cauſe a diſcharge of blood, together with the urine. We are exhorted by Ruyſch to enquire what kind of diſorder this is, but of what nature it is it will not be eaſy for any one to conjecture, before he knows whether all adults, who have this inequality of their kidnies, are troubled with pains of theſe parts.

20. Therefore, if the things which have been ſaid by the more ancient writers are attended to, any one will think, at firſt, that this is not true. For as Ariſtotle (*a*) has aſſerted, "that the kidnies of men are like to thoſe "of oxen, inaſmuch as they conſiſt of a compoſition of many very ſmall kid-"nies, and are not equable;" it may ſeem that they were found ſo in the greater part of bodies at leaſt: yet that the greater part of men were, at that time, troubled with pains of the kidnies, cannot, I think, ſeem probable to any one.

But if we ſuſpect that he was induc'd to make this aſſertion, from the inſpection of fœtuſſes, and young children; which ſuſpicion is hinted at in the annotations to Euſtachio's book of the kidnies (*b*); we muſt ſet aſide Ariſtotle, and enquire how often the ſame has been ſeen by others, in what ſubjects

(*z*) Adv. anat. Dec. 1. n. 9.
(*a*) De partib. anim. l. 3. c. 9.
(*b*) Ad c. 3. in fin.

they

they were ſeen, and by whom. Euſtachius (*c*), who examin'd as many kidnies as any one whatever, has told us, that he had met with this appearance in one or two only; and although he does not ſay that they had labour'd under any renal diſorder, he ſeems, nevertheleſs, to hint it in ſome meaſure, when he ſays that the kidnies of one "were of a very remarkable magnitude "alſo, and one which far exceeded others;" and when he, in another place (*d*), denies that this appearance would be found, "unleſs we have either got a body "whoſe kidnies abound with tubercles, or nature has deviated from her own "laws in forming them."

And as this is ſaid to happen "very ſeldom," by ſo ſkilful an anatomiſt, it would be very ſurprizing it ſhould have been, afterwards, aſſerted by Veſlingius (*e*), that the kidnies, "however, frequently retain, in adults, that "inequality of ſurface, as if made up of a number of glands compacted to-"gether, which they exhibit in the fœtus;" if it were not more juſt to interpret him thus; that is, by ſuppoſing him to have ſaid *ſæpius*, not ſo much to ſignify frequently, as by way of compariſon with what he had ſaid before, which is certainly more rare; I mean, that one kidney is ſometimes found inſtead of two; more juſt, I ſay, than to blame him, as Riolanus (*f*) does. Againſt whom, when denying that he "had ever ſeen it," Dominico de Marchettis (*g*) ſo defends Veſlingius, as to affirm, that he had demonſtrated it "two or three times," in this theatre. But neither of them has mention'd a word, whereby we may underſtand whether the patients, in whom they were found, had been healthy or diſeas'd. Nor, indeed, has Diemerbroeck (*h*), who once ſaw the ſame appearance, mention'd any thing to this purpoſe: nor others, whom I deſignedly omit; eſpecially thoſe who are more modern than he, if you except two, one of whoſe obſervations you have in the Sepulchretum (*i*), and the other in the Bibliotheca Anatomica (*k*).

The latter affirms, "that he had once had an opportunity of ſeeing this lo-"bulated ſtate of the kidnies, in a young man of nine years of age, where it "was very evident, and manifeſt; this viſcus being, in the mean while, af-"fected with no diſeaſe whatever." And the former, "in a girl of ten "years of age," who was troubled with very ſevere pains of the belly, which brought on convulſions and vomitings, whereby ſhe was at length carried off; although he obſerv'd ſeveral morbid cauſes in other parts, nevertheleſs found the kidnies to be very hard, and one of them "of an unuſual figure, that "is to ſay, fiſſur'd into ſeveral lobes." But if you ſet aſide this laſt on account of theſe ſeveral cauſes, and both of them on account of their age, not being quite adult; for it would not be very ſurprizing if, in ſome bodies, both the kidnies, or one of them at leaſt, ſhould loſe that inequality which is natural to children, ſomewhat later than uſual in life; out of the other obſervations that I at preſent remember to have read, there are no more than four of this kind, one of Ruyſch's, another of Petruccio's, a third of Mauchart's, and the laſt of Trew's. And from the two firſt obſervations, if

(*c*) C. cit.
(*d*) C. 42.
(*e*) Syntagm. anat. c. 5.
(*f*) Animadv. in cit. Veſlingii locum.
(*g*) Anat. c 5.
(*h*) Anat. l. 1. c. 18.
(*i*) L. 1. ſect. 13. obſ. 3. in additam.
(*k*) Tom. 1. p. 1. in adnot. ad c. 1. Malpigh. de Renib.

we

we attend to ſome circumſtances that were join'd with them, we ſhall conjecture, that they, in whom kidnies of this kind were found, had labour'd under diſorders of the urinary paſſages.

For Ruyſch, formerly, before he gave us thoſe two caſes which furniſh'd me with an occaſion of conſidering theſe things, having found the ſame ſtructure of kidney in an adult; although he has hinted nothing in regard to his diſeaſes, in the delineation of that kidney (*l*); nevertheleſs repreſented the upper tract of the ureter to us, as being wider than it generally is in its natural ſtate, in thoſe who never have been affected with renal diſorders: and Petruccio, when in the ſecond table of his Spicilegium (*m*), he repreſents monſtrous kidnies; that is, kidnies "conſiſting of a great number of glands, "wrap'd up together like a cluſter of eggs;" repreſents the pelvis of the right kidney as being more wide, and more protuberant, than is natural; and the ureter of the left, according to what himſelf ſays, as being "monſtrous, "both in reſpect to thickneſs, and to largeneſs." And in the obſervation of Mauchartus (*n*), there is no need of conjecture to make us ſuppoſe that the old man, who had his kidnies "very large, and unequal, like the kidnies "of oxen," had labour'd under many and conſiderable diſorders of the urine, and the parts deſtin'd thereto. For it is certain that he had been nephritic for ſome years; that after this an almoſt perpetual iſchury had ſucceeded, and then, an incontinency of urine at intervals: and that within the ureters, which were diſtended like the inteſtinum ileum, urine was found like "but-"termilk;" whereas the pelvis, on both ſides, from whence they proceeded, was equal to the capacity of an egg: and, finally, that within the bladder, which was contracted, thick, and, in a manner, callous, two ſtones, one of which was large, had been contain'd; not to mention that many had been formerly diſcharg'd.

So, alſo, another old man; in whom both the kidnies were ſeen, by the celebrated Trew (*o*), to be "remarkable on account of their manifeſt diviſi-"ons into lobules, as, at other times, generally happens in children only;" had been for a long time, when living, ſubject to calculi of the kidnies, which he ſometimes diſcharg'd, in conjunction with bloody urine, till by a ſecond ſuppreſſion of urine in the bladder, he was carried off. Now if you ſhould aſk me what I have obſerv'd; although as often as ever I have happen'd to light on kidnies of this kind, it was in poor people, and thoſe, for the moſt part, unknown; and though, for this reaſon, it was either impoſſible to know at all, or at leaſt ſatisfactorily, to what diſorders they had been ſubject while living; yet this I will ſay, that from ſome marks it is allowable to conjecture, juſt as in the obſervations of Ruyſch, and Petruccio, that none of them had been totally free from diſorders, in which the urinary organs were concern'd. Which you yourſelf, alſo, will, I hope, eaſily underſtand, when you have conſider'd theſe hiſtories which I ſubjoin, but conſider'd them in general; for I ſhall ſo diſpoſe them, that you will ſee theſe marks, or tokens, to be more and more increas'd, as you proceed; and, from more ſlight, to become gradually more violent.

(*l*) Obſ. anat. chir. 80. fig. 64.
(*m*) De ſtruct. capſular. renal.
(*n*) Eph. n. c. cent. 8. obſ. 26.
(*o*) Commerc. Litter. a. 1743. hebd. 33. n. 3.

21. Some

21. Some of the viſcera, and the head, of a woman who died in this hoſpital, were brought to the college, at the time I was teaching anatomy, in the year 1726.

The medullary ſubſtance of the cerebrum was brown, and mark'd with frequent bloody points: the lateral ventricles were not free from water extravaſated within them: the cerebellum was very ſoft.

Both in the cavity of the thorax, and of the belly, was there ſome water, which was very foul. The tubes of the uterus had their larger orifice ſhut up, in conſequence of being firmly agglutinated to the ovarium, at that extremity. Both of the kidnies were unequal in their ſurface, and variegated with white ſpots, where the ſurface ſubſided; ſo that you might eaſily perceive this inequality not to have been natural. And the urinary bladder was internally red.

22. I demonſtrated the parts of a certain old man, and particularly thoſe of the belly, to our ſtudents, in the ſame hoſpital, about the end of the year 1742; when among them, I remark'd theſe to deviate from the uſual appearance of nature.

The tunica vaginalis of one of the teſtes contain'd a pretty large quantity of water, and that turbid: and from the albuginea, which inveſted the teſticle, near to the ſuperior globe of the epididymis, was prominent a roundiſh body, of the ſame colour with the albuginea. The great artery, where it divided itſelf into the iliacs, contain'd little bones within its coats. But this was nothing when compar'd with the ſplenic artery, which, from its beginning quite to its entrance into the ſpleen, conſiſted, almoſt univerſally, of bones; and was beſides this, much more wide than is uſual. Yet the ſpleen was, as far as appear'd to the ſenſes, in a ſound ſtate. The gall-bladder was leſs than it naturally is. The kidnies were ſmall in proportion to the ſtature of the man: and although they ſeem'd to be ſound internally; yet externally their ſurface was unequal. The urinary bladder was large, and had very thick parietes, ſuch as there generally are in thoſe who have labour'd under a difficulty in their urine, from a calculus, or from any other cauſe.

23. Another old man, to appearance of ſixty years of age; and ſo very beggarly and poor, that he even pick'd up a ſorry ſuſtenance from the outſide-rinds of melons, which were thrown out into the ſtreets, or any thing elſe of that kind; had come, once before, into this hoſpital, on account of a fever, and a ſenſe of oppreſſion in the thorax, which were accompanied with a difficult reſpiration, a weak pulſe, and a continual cough; whereby what is commonly call'd a catarrhous matter was diſcharg'd. When he ſeem'd to himſelf to be ſomewhat reliev'd, he went out again into the ſtreets, and not long after came to the hoſpital again. Laſt of all, about the middle of January in the year 1747, he return'd ſo emaciated, and ſo broken down, by diſeaſe, cold, and hunger, that he died a little after coming in.

I made uſe of this man's body, in my public demonſtrations, till I could ſupply myſelf with a better. I therefore examin'd the viſcera of the thorax and belly. To ſpeak then firſt of the thoracic, from whence you may judge of the cauſe of the principal diſorders, in this man; the thorax, as well as the pericardium, had a ſmall quantity of water extravaſated in it. But the lungs were ſtrongly connected to the ſides, and the back: and, indeed, the

right lobe, when it was drawn away, left a kind of opaque, thick, firm, and equal coat behind; adhering to the parietes of the thorax; extended quite from the lower part beyond half its length; and from the ſpine almoſt to the ſternum; which being pull'd away at one extremity, and after that from the ſternum, follow'd all together: this membrane neither belong'd to the pleura, nor to the membrane of the lungs, for both of theſe ſtill remain'd in their ſituations; I therefore ſuppos'd it to be of that kind which I have already (*p*) explain'd to you. The lungs themſelves were not extremely ſound; and ſomething hard was even perceiv'd within the upper part of one of the lobes.

But there was much greater miſchief in the heart. This viſcus was twice as large as it ought to have been: yet it did not contain blood, but polypous concretions only, and theſe ſmall and few. But as both the ventricles were dilated; the parietes of the right were very thin, as thoſe of the auricle, on the ſame ſide, were alſo; on the other hand, thoſe of the left ventricle were all thicker, and harder, than is natural. The valvulæ mitrales themſelves were enlarg'd alſo, very thick, and tuberous, on their lower edges. And the ſigmoid were leſs ſoft than is natural; but the ſemilunar were ſtill leſs flexible than them: and, indeed, one of theſe, in a part of its lower circumference, was already bony.

The great artery was wider than natural before its curvature; and, on the whole of its internal ſurface, was diſtinguiſh'd, here and there, with white ſpots, as the internal ſurface of the iliacs was alſo. Some of theſe ſpots were prominent on the internal ſurface: and theſe were very hard and bony; eſpecially where one of the inferior intercoſtals took its origin, whoſe orifice, happening to lie in the center of the ſpot, which protuberated in a circular circumference, had been ſo ſtreighten'd on this account, that together with the ſpot, it at firſt ſight reſembled a kind of lenticular gland, of a large ſize. And ſince I have made mention of the iliacs; before I add the other circumſtances which related to the belly; I will not conceal this, that all the iliac arteries were tortuous, juſt as we ſee the ſplenic to be: but that the iliac veins, the firſt only, that is quite to their partition, were affected with a kind of corrugation, as it were, ſo that it was with difficulty you could extend them.

The viſcera of the belly ſhow'd theſe marks of diſeaſe. The ſtomach was large, although it contain'd but little; and being without rugæ, was internally of a brown colour, in ſeveral parts, to a conſiderable extent, from the middle towards the left ſide: and ſtill more towards the œſophagus; and there ſomewhat more deeply. The whole convex ſurface of the liver, except a little ſpace on the right ſide, and at the lower part, coher'd firmly with the ſeptum tranſverſum: but in that upper ſurface, the ſubſtance of the liver was hollowed out with an hydatid, the diameter of which was equal to a finger's breadth. And the convex ſurface had its membrane of a whitiſh colour in one place, and in the midſt of that whiteneſs it was become bony for a little ſpace. The ſpleen itſelf was ſomewhat lax, and larger than natural in its thickneſs, rather than its length, or breadth; whereas the ſplenic artery, nevertheleſs, ſeem'd to be ſomewhat wider than even this increas'd thickneſs requir'd.

(*p*) Epiſt. 20. n. 37.

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The glands of the meſentery occur'd here and there, though in a man of that age; and many of them were of the bigneſs of a bean: yet if you touch'd them, or examin'd them, after being cut into, you could not be in doubt that they were free from diſeaſe.

But the magnitude of the kidnies, which was leſs than that of the body in proportion, and ſtill more the ſurface of them, differ'd from what I have been generally wont to ſee. For on their poſterior ſurface, they were equally convex, as on their anterior; both of them being unequal, and, in ſome meaſure, tuberous; but eſpecially in the left kidney. In the left, alſo, were certain depreſſions, as if from cicatrices. And the orifices of the ureters were ſeen to be ſomewhat larger within the bladder, than they naturally are; the bladder itſelf was internally reddiſh, and diſtinguiſh'd with ſanguiferous veſſels, running here and there, as if the veſſels had been fill'd with a colour'd wax; and externally it was furniſh'd with redder fibres than it generally is.

24. A ruſtic old woman, who was of a ſmall ſtature, and immoderately lean, died in the ſpace of two days, as was ſaid, of old age; but ſhe had labour'd under a difficulty of breathing, although without a cough, or any expectoration whatever: which remark I make, that you may know this to be all it was poſſible for me to learn of her diſeaſes; not becauſe I examin'd any other viſcera, but thoſe of the belly. For, although the body of this woman was alſo brought from the city, into the theatre, when I was teaching anatomy in the year 1740; yet, when I came to the thorax, I was furniſh'd with a better, or at leaſt with a larger body; the diſſection of which more effectually anſwer'd my purpoſes.

The abdomen, therefore, of this old woman being open'd, all the other parts were ſound, and theſe only were found to be preter-natural in their appearance. The large artery, from the diaphragm, quite to all the iliacs, was univerſally unequal from yellow bony lamellæ; and disfigur'd, beſides, from a thickiſh humour; which was brown, and of a bloody colour, and adher'd, here and there, to the internal coat; from whence, when broken through, and ulcerated, it had diſtill'd betwixt thoſe lamellæ that lay round about. A diſorder of this kind being alſo propagated into the very ſhort trunk of the cæliac artery, had, without hurting the other branches of it, ſo far extended itſelf into the ſplenic artery, that, although it was univerſally wider than it naturally is, and had its coats thicken'd; and had, in particular, ſo many and ſo conſiderable flexures, that I do not remember to have ſeen more, or larger, therein, at any time; and, for that reaſon, ſeem'd to be, at firſt ſight, what it really was not; it was, moreover, hard at the places of its flexure, and not without oſſification. The ſpleen, to which it went, was ſound, and, though but ſmall, correſponded very well, in proportion, to the ſize of the liver, and the other viſcera; and even to the whole body. However, the trunk of the hepatic duct was larger than it generally is. The uterus, on the other hand, which we found very much inclin'd to the right ſide, had ſo narrow a cavity, that I certainly never ſaw it narrower in an adult; yet the vagina was not ſmall, and the ſkin, being ruguous above the pubes, ſhow'd that the woman had brought forth children.

Both of the kidnies were of an unequal ſurface, almoſt as they are in the fœtus; and not only the pelvis, and two pretty large tubes which join'd to it, were prominent on the outſide of the kidney, but many tubes alſo of a ſmaller ſize, which went to one or the other of theſe large ones. All which were ſomewhat wider than they naturally are, as the ureters were alſo, and eſpecially on the right ſide. But the right kidney was much leſs than the left; and although internally, as far as I could judge by my ſenſes, it was not morbid, yet when diſſected it had a very ill ſmell. And the right ureter open'd into the bladder with a much wider orifice than it generally does, and with a much wider orifice than the left; ſo that the woman ſeem'd to have labour'd under diſorders, of the urinary paſſage, more on the right ſide, than the left. Then, alſo, it was perceiv'd why the bladder could not well have been diſtended, by blowing in air through the urethra, inaſmuch as a part of it was diverted by that large orifice, into the ureter, and even the pelvis of the kidney (as I plainly ſaw) and went out where the pelvis had been cut into.

However, the internal ſurface of the bladder was, almoſt univerſally, mark'd with ſanguiferous veſſels, and the ſmall tumid branches thereof, which were of a blackiſh colour; and, indeed, the whole lower part of the bladder was univerſally black, to a conſiderable degree.

25. To theſe I would have you add the obſervation upon the ſtable-keeper, which I have deſcrib'd to you already (*q*). For from hence you will ſee what were the diſorders of the bladder, and ureters; and from the others, that the ſurface of the kidnies was unequal. Nor is it of any importance, nay, perhaps, rather furthers my purpoſe, that I obſerv'd certain diſorders in thoſe kidnies beſides. For I do not think we are to inquire here, whether the injury of this ſurface alone, brought on thoſe very violent diſorders that are ſpoken of by Ruyſch (*r*). I ſhould perhaps believe, if I could admit of what was ſuppos'd by Riolanus (*s*), that the ſurface of the kidnies; inſtead of being unequal, as it is in infants; is, after ſeven years of age, or ſooner, form'd into an equality; becauſe a fleſhy cortex is thrown around it by an aſperſion of blood: a cortex which is ſomewhat livid, as thick as a man's little finger, and ſurrounds all thoſe tuberoſities which, of themſelves, make up the ſubſtance of the kidney in a child. For in the fœtus, alſo, the cortex exiſts in the ſame proportion, and compoſes the ſurface of the kidnies; and beſides, all the kidnies of adult perſons, whoſe ſurface was tuberous, would be ſmall, which is what I have not always ſeen: and that delineation of Ruyſch, which is refer'd to above (*t*), is diametrically repugnant to the ſuppoſition.

Yet, on the other hand, we are not here to ſuppoſe, that the kidnies were ſo much diſeas'd, as in ſome of the obſervations of Euſtachius (*u*), and Littre (*x*): in which, not only the kidney was externally full of tubercles, but had its ſubſtance, alſo, greatly decreas'd, or quite conſum'd; the place thereof being occupied by a ſandy matter, and the pelvis being fill'd with innumerable little ſtones, or a matter of that kind; and the beginning of the ureter, in fine, being quite ſtop'd up by a calculus of no ſmall magnitude. For if

(*q*) Epiſt. 4. n. 19.
(*r*) Supra n. 19.
(*s*) Animad. cit. ſupra ad n. 20. & Anthropogr. l. 2. c. 26.
(*t*) N. 20.
(*u*) De Ren. c. 45.
(*x*) Hiſt. de l'Acad. R. des ſc. a. 1701. obſ. anat. 5.

in one or the other of theſe caſes, thoſe ſymptoms had preceded, which are ſpoken of by Ruyſch; for in neither of them was there any thing of this kind, not even in the time immediately preceding death, which is very ſurprizing; certainly nobody would have been at a loſs to aſſign a reaſon why they ſhould happen, as they, on the contrary, did in the obſervations of Ruyſch.

Now if beſides the external tuberoſities you ſuppoſe any thing on the ſurface, or internally, which we may remark by attentive inſpection and obſervation; as in almoſt all our hiſtories; from whence it may be conjectur'd what cauſe of inequality had preceded, and what cauſe was capable of bringing on the appearances of this kind; as well as the pains, and the diſcharge of bloody urine; perhaps ſomething will ſeem to be pointed out, which is not immediately contradictory to probability.

Suppoſe then, that many of thoſe cavities fill'd with ſerum; which I have deſcrib'd to you, in a former letter at large (*y*), and one of which was even then remaining in the ſtable-keeper; had previouſly exiſted in the ſurface of the kidney. By reaſon of this ſerum, being ſometimes very acrid in its nature, the kidney might not only be ſtimulated, but ſome ſanguiferous veſſel eroded, from whence a diſcharge of bloody water, and pain would ariſe; and this pain might alſo happen to be increas'd from a quantity of ſerum, which both diſtended and overloaded the part. And when this ſerum is diſſipated, I have ſhewn that cicatriz'd ſpots and depreſſions remain behind; and theſe in one of the hiſtories produc'd (*z*), not altogether obſcure: between which frequent depreſſions, the uninjur'd ſubſtance of the kidney being, here and there, prominent, will render the ſurface unequal, and reſemble a kind of tuberoſity. Here then you have what came into my mind, upon an obſcure and very difficult queſtion. But I would have you ſuppoſe it to be advanc'd only for the ſake of example, and by way of ſtirring you up to invent a better hypotheſis: nor indeed am I ſufficiently pleas'd with it on many accounts, but particularly becauſe I am afraid, leſt that inequality, which was ſeen by Ruyſch, was different from what has been ſeen by me, and explain'd in the beſt manner I was able. Since, then, we have conſider'd the cauſe of pain in the loins, as the effect of a diſeaſe in the kidnies; firſt from calculi, and, after that, from other cauſes; let us now conſider it as ariſing from the diſorder of other parts alſo; and that by propoſing an obſervation or two.

26. A carman of Padua, betwixt thirty and forty years of age, who was before healthy and robuſt; except that he had labour'd under the lues venerea; having by chance fallen down, ſo that the wheel ran acroſs his belly as he lay, was ſeiz'd with ſuch ſevere pains in his loins, and back, that he was oblig'd to confine himſelf to bed, for eight months together; the phyſicians, whom he had ſent for in pretty great number, not being able to be of any ſervice to him for theſe pains. At length when the celebrated Valliſneri had come to him, and had obſerv'd the patient to complain of violent pains of the loins on the left ſide in particular; by applying his hand to the ſide of this very part, he perceiv'd a pulſation as from an aneuriſm; and,

(*y*) Epiſt. 38. n. 39. & ſeq. (*z*) N. 21 & 23.

for

for that reaſon, preſcrib'd ſuch things, as would have tended, perhaps, to preſerve the patient for a very long time, though not to cure him.

After that this place ſwell'd: the tumour extending itſelf pretty wide, and raiſing up even the ribs that lay neareſt to it. An œdematous tumour, in the mean while, had occupied the whole leg and thigh of that ſide. As the patient, however, had a good appetite, and ate very plentifully, and the tumour conſequently increas'd, a very unſkilful ſurgeon took upon him to be of a quite different opinion from Valliſneri; and not only to apply ſuch things as tended to bring on a ſuppuration, but even, when, from the uſe of theſe things, veſications and chops had appear'd in the ſkin of the loins, to make an inciſion therein. This inciſion was follow'd, on the ſucceeding night, by a rupture of the tumour, which brought on an immediate profuſion of blood to a very great degree; the conſequence of which was a loſs of ſtrength and voice: ſo that within a quarter of an hour after the rupture, he departed this life. On the day following, which was the fifth of November, in the year 1720, Valliſneri related theſe things to me, and beg'd of me that I would be preſent at the diſſection, together with him, which was perform'd by our Vulpius.

The abdomen being open'd, the aneuriſm came into ſight, a larger than which I never ſaw. It almoſt occupied the half of the abdominal cavity, being plac'd longitudinally. For extending itſelf from the diaphragm to the pelvis, it took up all the ſpace that there is from the right ſide of the vertebræ, to the left ſide of the diſtended abdomen; the ſpleen, the ſtomach, the inteſtines, the meſentery, the vena cava, and the left kidney, being ſo far driven towards the right ſide, that even this kidney lay in the umbilical region. The aneuriſm was then of an oval figure: when fill'd with blood it had, without doubt, been of a ſpheroidal figure: yet it was, even then, ſtuff'd up with a very great quantity of blood, which had concreted round about into polypous laminæ; but was ſo far ſtill grumous in the middle, as to reſemble the conſiſtence of a pultice. And after all this was taken away, we then obſerv'd the following things.

The aorta, where it firſt came down into the belly; as it began, in that part, to be immediately dilated in an anterior direction in a ſmall degree, and towards the right ſide; not more than ſo as to admit of a clench'd fiſt of a moderate ſize; expanded itſelf ſo much to the left ſide, that it ſeem'd to make up the anterior and lateral parietes of the deſcrib'd aneuriſm: which, in that part, communicated largely with the cavity of the aorta, betwixt the appendices of the diaphragm.

The lateral parietes, when they had come to the poſterior parts, immediately terminated there; and their termination was very cloſely agglutinated to the parts which the aneuriſm had not remov'd from thence: for which reaſon there was no peculiar poſterior paries to the aneuriſm; but the very parts themſelves ſtood in the ſtead of a paries. And of theſe parts, thoſe which, by reaſon of their bony nature, could leſs yield to the ſtrokes of the in-ruſhing blood, were themſelves, alſo, affected with a caries, the perioſteum being eroded; that is to ſay, the lower rib, and the hollow ſurface of the os ilium: and the vertebræ were in a ſtill worſe ſtate.

For the tranſverſe proceſſes of the lumbar vertebræ, on the ſame left ſide, were either already broken through by caries, or could be eaſily broken by

a ſlight preſſure of the finger alone: and the bodies of the lowermoſt vertebra of the thorax, and the two lumbar which lie neareſt to that, were hollow'd out to a very great depth, and in great meaſure conſum'd; which circumſtance the more readily occur'd to the eye, becauſe thoſe thick cartilaginous ligaments that lie betwixt the bodies of the vertebræ were, even then, all in their proper ſituation, prominent, untouch'd by diſeaſe, and of a beautiful whiteneſs: and the depreſſion made by the deſtruction of the vertebræ, render'd their prominences more ſtriking; as, on the other hand, their prominences better ſhow'd us how much the vertebræ had been conſum'd. All theſe things, therefore, which came immediately into view, upon taking away the blood, being ſufficiently examin'd; we turn'd our eyes to the viſcera of the belly, and were ſurpriz'd to find them all ſound, in ſpite of ſo great an inverſion of their order.

In the thorax alſo, we found nothing preternatural, except that the pericardium contain'd a little more water than it generally does. For as to the lungs appearing to be very white, juſt as if the blood had been waſh'd out of their veſſels, by frequent injections of water; this we did not doubt was owing to the blood flowing into the ruptur'd aneuriſm, where there was no reſiſtance, in the latter part of life.

27. Many things which I might have obſerv'd, in regard to this very large aneuriſm, I purpoſely omit; and thoſe things, in particular, that I hinted at before, when I was ſpeaking of other aneuriſms. I chooſe rather to obſerve two things here, one of which you will have in the latter part of this letter (*a*); and the other relates to the ſuſpicions of aneuriſms, after pains of the back and loins; which have been equally troubleſome, and long-continu'd; that were not found out in the living body, at one time; and, at another time, what is ſtill more ſurprizing, even in the diſſection of the body after death.

To ſpeak firſt of the latter: read over again, very attentively, ſome hiſtories that are transfer'd into the Sepulchretum, in more than one ſection; and even into this twenty-ſecond: that is, under obſervations the thirty-fifth and fortieth. You will ſee that after pains of this kind, which were, at length, ſucceeded by a ſudden death, in one of them "two vertebræ of the loins were "found to be corroded; one with a rupture of the aorta, and vena cava, "under which they lay; and that, by this means, a great effuſion of blood "had been made into the belly, from both of theſe veſſels:" and in the other, you will read that there was found "a kind of putrid, blackiſh, and "corrupt fleſh," which had ſo eroded the ſpine, in the abdomen, "to the "length of two ſpans, and to the breadth of two hands, as to make it con-"tain an ulcer of a cancerous nature, of the bigneſs of a man's fiſt; and "that the whole of the ſpina dorſi could be eaſily broken by a ſlight ſtroke: "and, finally, that it had, at laſt, alſo, corroded the vena cava itſelf, where "it ran down upon the ſpine; the blood of which, by getting through the "diaphragm, that had been perforated by the ſame putrid fleſh, had ob-"ſtructed the motion of the lungs, and brought on death."

(*a*) N. 30.

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The firſt of theſe diſorders is ſuppos'd to have been the *tabes ſpinea*, deſcrib'd by Hippocrates: the ſecond, a very large and putrid tumour of the pancreas. And although I do not deny this, I nevertheleſs ſuſpect the moſt conſiderable part of the tumour to have been from a dilatation of the large veſſels. Nor am I altogether without a ſuſpicion of this kind, when I, ſoon after, read in the ſecond forty-ſecond obſervation; for the number is repeated through careleſſneſs; when I read, I ſay, that after a conſtant and long-continu'd pain, about the region of the os ſacrum, there was found, "about "that region, in the part where the vena cava is bifurcated, a large abſceſs, "in which was contain'd a fœtid matter, and a coagulated blood." And alſo, "that the os ſacrum was ſo corroded, and deſtroy'd, in this part, that it "could be very eaſily drawn out, and rub'd into pieces, with the fingers."

But I ſhould ſuppoſe there was ſtill leſs danger of my being deceiv'd, in my ſuſpicion of the obſervation, which is the firſt in the Additamenta to the twelfth ſection of the fourth book. For therein we read of a man, who had been long afflicted with violent pains of the whole ſpina dorſi, and who was found, about a quarter of an hour after having din'd with his family, lying upon the ground, and dead; the ſpina dorſi being broken aſunder, which they ſuppos'd to have, probably, happen'd to him, while he ſtoop'd down to lay hold of the chamber-pot. From the belly, when open'd, a great quantity of blood immediately burſt forth, wherewith the whole cavity of the thorax, on the left ſide, was fill'd. And there was, likewiſe, a very large tumour, which reach'd from the ſixth vertebra of the back, quite to the firſt of the loins, and which "appear'd to be fill'd with a very great quantity of fleſh, of a cancerous na-"ture, macerated in its ſubſtance, and cover'd over with a ſmall quantity of "pus, and coagulated blood." The tumour was contain'd in "a very "ſtrong membrane, that had obtain'd the thickneſs of a crown-piece, but "was torn near to the firſt vertebra of the loins; which was, in part, deſti-"tute of its perioſtium: ſo that the two laſt ſpurious ribs no more coher'd "to the ſpine." Moreover, "the ſix inferior vertebræ of the back, and the "firſt of the loins, were entirely deſtroy'd by a caries, as if eroded by "worms; ſo that, in this place, the ſpine was without any ſolidity, or "ſtrength," and, for that reaſon, eaſily broken through. "The diaphragm "itſelf was perforated ſo as to admit of two fingers join'd together. The "emulgent vein of the left ſide was alſo torn aſunder."

I could wiſh any mention had been made of the great artery, as is made of this vein; as that artery muſt have adher'd to all theſe rotten vertebræ: for from thence I might either have confirm'd or rejected my ſuſpicion. You have ſeen that, in my obſervation (*b*), the vertebræ were very deeply hollow'd out; and, in one of the obſervations refer'd to, ſo corroded, that the ſpine might be broken with a ſlight ſtroke: and in this laſt you ſee that it was really broken after eroſion. And you perceive what I may ſuſpect from mine. But this is beyond ſuſpicion, that from a large aneuriſm adhering to the ſpine, this miſchief may, beſides others, be brought on; I mean that the ſpine may be broken; for there was not much wanting to compleat this accident, even in our carman.

(*b*) N. 26.

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However, leſt you ſhould ſuppoſe all my ſuſpicions to relate to thoſe obſervations only, that are extant in the Sepulchretum; at leaſt turn to that which being publiſh'd, amongſt others, by a very eminent man, many years after the ſecond edition of this book; or rather, which being (as far as I can underſtand from the Acta Helvetica (*c*), wherein the ſame hiſtory is) newly form'd by him; tells you that there had been a very conſiderable tumour in the ſide of the loins, and the left hypochondrium, "from a very large glo-"bular, and tenſe body, occupying almoſt the whole ſide of the abdomen;" which, when cut out, and ruptur'd, "pour'd out a great quantity of brown "cruor, wherewith it was fill'd, of a yellowiſh ſubſtance, ſpongy, and form'd "into lamellæ, that lay one upon another."

But as the left kidney adher'd externally to this body, which was itſelf ſituated behind the left tract of the inteſtinum colon, within the duplicature of the peritonæum, and even, in ſome part of it, "penetrated into that bulbous body;" it ſeem'd that this ſame body was a part of the kidney; that is to ſay, a part enlarg'd to an incredible degree. I, however; which I take the liberty to ſay, with a deſire of finding out truth, and not with a deſire of diſſenting from others; ſuſpect it to have been an aneuriſm, not only from its ſituation, or from the concretion of the blood therein, in ſo large a quantity, and the formation thereof into lamellæ, lying one upon another; but, finally, from this circumſtance alſo, "that a living animal was ſuppos'd to exiſt" in the man's belly, while living; which ſeems to argue that ſome pulſation was perceiv'd: and I ſuppoſe that the aneuriſm had, by its increaſe, vitiated a part of the neighbouring kidney.

Not much unlike this ſuſpicion of mine, was the judgment of the celebrated Nebelius (*d*), in regard to a roundiſh tumour; which, being annex'd to the left kidney, had been ſaid "to conſiſt, internally, of a great number "of coats, and to be fill'd with blood and tartareous matter: for he thereby knew it to be an aneuriſm of the emulgent artery. And, indeed, he has added the caſe of a celebrated phyſician, which may, in great meaſure, be compar'd with that which was juſt now conſider'd by me. For the ſame left ſide being affected with pain, at firſt of the nephritic kind, and after that of the rheumatic, as was ſuppos'd; and the phyſician being ſuddenly carried off, upon the pain having become more violent all at once; it was found, that the blood, which had been diſcharg'd into the belly in great quantity, had proceeded from the ruptur'd aneuriſm, which protuberated in the ſame ſide of the belly, under the annex'd inteſtinum colon; being equal in magnitude to the head of a child of three years old. And "in this hollow tumour, when "cut into, which was diſtinguiſh'd with internal membranes, and fill'd "with coagulated blood, adher'd the left kidney in a putrid and flaccid "ſtate."

But while I take notice of theſe things, I would not have you ſuppoſe from hence, that I am quite a ſtranger to thoſe internal abſceſſes, whereby not only a pain of the loins, os ſacrum, or ſpina dorſi, may be excited, but a caries of the vertebræ alſo may be brought on. For I know, to refer to thoſe I have read of in the more modern books, that abſceſſes have been found in that

(*c*) Tom. 1. (*d*) Eph. n. c. cent. 9. obſ. 59.

part of the meſocolon, which many call the meſorectum (a word that is unlearnedly compounded) in thoſe whoſe ſymptoms; and among theſe "pains "within the os ſacrum;" are accurately deſcrib'd in the Commercium Litterarium. I know, likewiſe, from the Acts of the Cæſarean Academy (*e*), that they have been attended with pains of the loins, and back; in whom, after death, large internal abſceſſes were found, together with a blackneſs, either of the lower lumbar vertebræ, and a caries, which had broken down one half of the os ſacrum into little pieces; or a ſimilar diſorder of the firſt lumbar, and the laſt thoracic vertebra.

Yet I cannot forget either the merchant, who having labour'd a whole year, under a very great pain of the ſpina dorſi, had an aneuriſm, as Ballonius (*f*) has aſſerted, in the aorta, where, lying upon the vertebræ of the loins, it is divided into the ilacs; or that nobleman who had been afflicted with a very violent pain of the back, in whoſe aorta was, likewiſe, found an aneuriſm, agreeably to the diagnoſis of Veſalius, which I have already commended (*g*), and which was really ſurprizing at that time, though eaſily imitable now; and that not without a caries of the neighbouring vertebræ, and a diſorder of the ribs. And as long as I ſhall call to mind theſe, and other examples like theſe, which have frequently offer'd themſelves to others, and to me alſo, I cannot help fearing (where deſcriptions of abſceſſes of this kind, found in thoſe places occur, ſo as to leave the mind in ſuſpenſe) leſt an aneuriſm ſhould have lain hid under the name of an abſceſs.

Thus far of ſuſpicions in diſſected bodies after death.

28. And in regard to thoſe which have happen'd to me in living bodies; to omit others; I will mention two patients, to whom I myſelf had alſo given advice, when I was in the place of my nativity, againſt violent and obſtinate pains of the loins and back. The one was a brazier, by name Peregrini. And this man (as I heard after coming here to take upon me the profeſſorſhip) had ſtill continu'd to be afflicted with his pains, till he, at length, died ſuddenly, which was an event but little expected by the phyſicians: ſo that my ſuſpicion was confirm'd, of theſe violent pains having their origin from an aneuriſm of the aorta, where it deſcends in the courſe of the ſpine; and there is no doubt but his ſudden death was from the rupture of the aneuriſm.

But the other was a nobleman, by name John Anthony Corbiceo, who was ſnatch'd away by a ſimilar fate, when it happen'd unluckily that I was abſent; otherwiſe I might have had the liberty of diſſecting the body, which I ſhould much have wiſh'd. For I ſuſpected an aneuriſm in him, ſo as, at the ſame time, to fear leſt a vomica might lie hid in the liver, of which, when ruptur'd, a ſpeedy death would be the conſequence. And, indeed, there were many marks, and thoſe not obſcure ones neither, of the liver being affected; but with theſe, nevertheleſs, were preſent, and even had preceded a great part of them, and perhaps all, ſuch pains of the loins, as are not wont to be join'd with a vomica of the liver. It is, perhaps, worth while to relate the whole hiſtory to you here with accuracy, eſpecially as I have promis'd it to you before (*h*).

(*e*) A. 1742. hebd. 20. n. 3.
(*f*) Paradigm. 13.
(*g*) Epiſt. 17. n. 3.
(*h*) Epiſt. 36. n. 6.

This

This gentleman was ſixty years of age, tall in ſtature, of a large muſcular body, his face being red from ſmall ſubcutaneous veins, which were here and there conſpicuous; but particularly at the lower part of the noſe. The flux of blood from the hæmorrhoidal veins; which us'd to return at intervals, and without any injury to the conſtitution; having been diminiſh'd now for a twelvemonth, and uneaſy affections of the mind coming on, his body began to be ſomewhat emaciated, before the beginning of the ſpring, in the year 1710. And ſoon after, as he was riding in his chariot, as his cuſtom was then, a pain diſcover'd itſelf in each of his loins, and that part of the ſpine which lies betwixt them: in which parts it had been before obſcure only, and not conſtantly, but ſometimes. Now, however, it not only continu'd, but, being increas'd about the beginning of April, and grown much more ſevere before May, was very troubleſome to the patient, eſpecially when he was ſitting, or lying down; and ſtill more when he endeavour'd to turn himſelf in the ſlighteſt manner; or upon bending his body, and raiſing it again; or when he roſe from his bed.

It was thought proper, on account of thoſe things which I have ſaid of the hæmorrhoidal flux, and, in like manner, on account of the blood, which, in the preceding months, had flow'd, more than once, ſpontaneouſly from the noſtrils, that blood ſhould be taken away, firſt from the arm, and after that from the piles; care being previouſly taken that the belly, which was then coſtive, ſhould be relax'd. Opening the belly was of great uſe to the patient, as the firſt bleeding was alſo; ſo that the pain now ſeem'd to be quite remov'd. But the ſurgeon, nevertheleſs, having, without conſulting any phyſician, applied leeches to the piles, which he found to be very turgid, ſo great a quantity of blood was ſuddenly diſcharg'd, that, not long after, there appear'd marks of the habit being much weaken'd and deprav'd. Being, therefore, ſent for again, after the middle of June, I not only heard what I have already related to you, but other circumſtances alſo. For it was now more than twenty days from the time that a jaundice had appear'd, with an œdematous ſwelling of the feet: at firſt he could get no ſleep; his appetite for food was loſt; and he had a languid ſenſation of the ſtomach after dinner: but now this ſenſation was quite remov'd, and his ſleep and appetite alſo, though the latter in part only, had return'd ſince the time in which he firſt began to take the remedies that were given him againſt the jaundice: and among theſe remedies it had been obſerv'd that rhubarb, though very ſparingly given with currants, had increas'd the laſſitude; not ſo much becauſe it purg'd much by ſtool, as becauſe it exacerbated the pain in the laſt lumbar vertebra, and the baſis of the neighbouring os ſacrum. For the patient complain'd much of this pain being a great fatigue to him; and aſſerted, that it was much more troubleſome, if he, at any time, walk'd through his chamber.

It chagrin'd me very much, that the pain, which had been ſuppos'd to be entirely remov'd, ſhould have not only return'd, ſoon after it ſeem'd to have ceas'd, but ſhould become more violent every day. Yet I was ſtill more diſpleas'd with other ſymptoms. For I obſerv'd that the pulſe of the patient was frequent, and ſomewhat hard; his reſpiration now and then deep, and difficult, as it were; his feet, and the lower parts of his legs, but parti-

cularly the foot and leg of the right ſide, were ſomewhat ſwell'd, and preſerv'd the marks of preſſure, after the finger was applied to them: his ſkin and his eyes were yellowiſh; his urine, and his eyes alſo, were obſerv'd to be more yellow in the day-time, and what was the worſt of all, when I applied my hand to his belly, I found, on the right-ſide, under the very arch of the lower ribs, the liver ſwell'd to the ſize of a kid's head, and hard beſides; but without pain. While I was feeling this tumour, the patient ſaid that he had obſerv'd it for the ſpace of three years, though not to be ſo large, as he had, alſo, ſome yellowneſs in his eyes; and yet, ſays he, you all very well know that I have always had good health till this year.

Having very cautiouſly determin'd, in conjunction with his phyſician, upon ſuch remedies as ſeem'd moſt proper at that time, I went to ſee the patient again a third time, before the middle of July, in order to conſult with the ſame phyſician, and with Albertini, who had been ſent for from Bologna. At this time, however, the œdematous ſwelling of the lower limbs was entirely vaniſh'd, I ſuppoſe becauſe the patient lay in bed for the moſt part: he had a good appetite for food, and his ſtomach ſeem'd to perform its office very well. But he was troubled with watchings in the night: his pulſe was more frequent in the evening, though it was pretty much ſo in the morning; it was much larger than it had been before, and not without ſome impetus: he had a thirſt: his tongue was very dry, and ting'd with a red colour, inclining to blackneſs: the ſkin was not yet without yellowneſs, although the ſtools were not, nor had before been, of a white colour: his urine was even then of a ſaturated colour, but thin: the tumour of the liver, in which there had been pain, ſometimes, ſince my having ſeen the patient, though it had been readily appeas'd, might at that time be felt without pain, unleſs any one handled it for a long time, and ſomewhat roughly; for then ſome pain aroſe in the lower edge of the liver.

Albertini, while he was examining this tumour with his hand, thought he could obſerve ſome inequality, juſt as if the ſurface of that viſcus was made rough, with a kind of pretty large granules; and from hence he conjectur'd that the tumour was inclin'd to a ſcirrhous nature, in conſequence of the glandular bodies, as it were, of the liver being diſtended by the concreted bile: yet, by reaſon of the pain, he was afraid leſt the nature of the tumour ſhould be different in ſome other part. When he had, in conjunction with us, approv'd of ſuch things as it became a very cautious phyſician to approve of, and had return'd to Bologna; and I was gone to a diſtant place to attend the cure of a patient there; it ſuddenly happen'd that this patient; who had not only ſeem'd to be no worſe in thoſe days, but on the fourth from our conſulting together, ſeem'd to thoſe about him, and in particular to himſelf, to be much better; having got up to take his ſupper, at the firſt hour of the night, was ſeiz'd with a kind of troubleſome ſenſation of his ſtomach, and of the affected part; his face being, at the ſame time, cover'd all over with a cold ſweat, his lower limbs very cold, and his belly very tumid.

He was already laid in bed again, when the phyſician, who had been ſent for in haſte on this occaſion, found, beſide the other circumſtances, a pain of the whole epigaſtrium, a reaching to vomit, a low and languid pulſe; his voice and his ſenſes being weak, and his face like that of a carcaſe. Therefore,

fore, at the eighth hour from the beginning of theſe ſymptoms, death came on. Muſt we ſuppoſe this to have happen'd from an abſceſs of the liver being ruptur'd, as moſt of the ſymptoms, but not all of them, ſeem to ſhow? Or muſt we ſuppoſe it to have been owing to the rupture of a ſanguiferous veſſel?

Albertini himſelf; who had lately obſerv'd all the circumſtances which fell under his examination, with great accuracy, according to his cuſtom, and had enquir'd into the others, and did not know of any more beſides thoſe which I wrote to you of juſt now; having receiv'd an account, in a letter from me, of the death of this man; though he naturally conjectur'd that ſomething had been ruptur'd, by the motion of the patient in riſing, and that a great quantity of fluid was extravaſated into the cavity of the belly; yet he declar'd that he could not ſo well conjecture what it was that had been ruptur'd. But if ſome marks of a ſuppurated tumour, and among theſe, what he chiefly requir'd, rigors, and ſhiverings, had preceded; none of which certainly had ever happen'd; he then confeſs'd, that he ſhould, without heſitation, have accounted for the circumſtance from a ruptur'd vomica of the liver. Therefore, if, in any part of the liver, any tumour had happen'd to come ſlowly and latently to ſuppuration, that he ſuſpected the ſudden death was not ſo much to be imputed to the rupture of that ſmall part, as to the rupture of ſome contiguous blood-veſſel, which had been injur'd by the pus. Yet by this ſuſpicion, that old and obſtinate pain in the vertebræ was not explain'd, mention of which I do not remember to have ſeen made, in the great number of hiſtories of abſceſſes of the liver, that I have conſider'd; and beſides, that tumour, which we had touch'd, with our hands, was far diſtant from the vertebræ: and the lower edge of the liver, where I have ſaid the pain had been for the moſt part, of late, was ſtill more ſo.

Nor is there any colour for our ſuppoſing the pain, which was extended to the lower vertebræ, in particular, and the baſis of the os ſacrum, to have been owing to the trunk of the hæmorrhoidal vein; the roots of which we have ſaid were ſo turgid; for after that great quantity of blood being diſcharg'd thereby, they were certainly no longer turgid: and when they were the moſt turgid, it had, even then, happen'd that the pain ſeem'd to have been remov'd, though for a ſhort time. But if an aneuriſm of the aorta, where it goes down upon the vertebræ; of which I have ſome ſuſpicion, beſides the tumour of the liver; does not ſeem to you to be ſuch a diſeaſe, that the effects of it could be ſo far obſcur'd, even for a ſhort time; and that cannot be conceiv'd to exiſt without many other, and conſiderable ſymptoms; I beg of you to determine nothing on the queſtion, before you have read the obſervation which is here ſubjoin'd.

29. An old man, who was formerly ſuppos'd to have been diſorder'd from the lues venerea, had already lain many days in this hoſpital, complaining of every thing, but what could refer to that lues, or to a large internal aneuriſm; and certainly, for I enquir'd with the greateſt care, was neither troubled with pain, nor a ſenſe of weight, nor a difficulty of breathing. He died a little after dinner, and that ſuddenly, about the middle of December in the year 1718.

The belly being open'd, and the urinary bladder taken away, together with the penis; for I was at that time buſy in obſerving ſome things that re-

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late to thoſe parts; the urethra confirm'd the opinion of that old lues. For it was, in ſeveral places, full of ſcars, and the ſeminal caruncle itſelf was not in its natural ſtate of conformation; ſo that it was not eaſy to demonſtrate the two very ſmall orifices, into which it is perforated laterally, nor the orifice of the ſinus, which lies betwixt them. To theſe were added fibres, diſtinct from each other, and prominent; from which ſomething like a ſmall triangle was form'd, the baſis whereof was very near to the bladder, while the vertex touch'd the caruncle.

The viſcera being then remov'd, a large aneuriſm of the great artery came into view; reſembling a creſcent in its figure, the back of which was plac'd tranſverſly under the annex'd diaphragm, while the horns were turn'd downwards, and were hid behind the pſoæ muſcles on each ſide; the left horn ſo far as to reach to the lower third part of the muſcle; but the right did not come down ſo far. This aneuriſm, likewiſe, had no poſterior paries; wherefore, taking away the blood with which it was fill'd; and which had been, in great meaſure, form'd into polypous laminæ, lying one upon another; the bodies of two or three vertebræ, that belong'd to the lower part of the thorax, and the upper part of the loins, immediately appear'd: theſe vertebræ were naked, but deeply eroded; the white and cartilaginous ligaments being here, alſo, protuberant betwixt body and body, and, to appearance, untouch'd by diſeaſe. But this aneuriſm had been ruptur'd, in its upper part, on the left ſide; ſo that the blood, where the diaphragm had given way, burſt forth, from the ſame ſide, into the cavity of the thorax, which it had almoſt univerſally fill'd.

30. You ſee, then, how obſcure the ſigns of ſo large an aneuriſm were in this caſe; though it is not to be doubted but ſome muſt formerly have preceded, and particularly pains of the loins.

But if you compare this obſervation, and that made upon the carman (*i*), with other obſervations of aneuriſms in the aorta, whereby the neighbouring vertebræ were corroded; you will, perhaps, be ſurpriz'd at one thing, I mean, that the ligaments lying betwixt theſe vertebræ had appear'd to us to be untouch'd: which other writers of theſe obſervations, as far as I can at preſent remember, have not taken notice of. And indeed ſome of them have expreſly ſaid that thoſe ligaments were found to be hollow'd out, and conſum'd, no leſs than the bodies of the vertebræ; as, for inſtance, the celebrated Vernojus (*k*), and the author of the laſt figure but one, in the memoirs of the Royal Academy of Sciences at Paris, for the year 1714, whereby this is clearly ſhown.

And indeed that cartilages are then liable to conſumption; whether this happens from the frequently repeated ſtrokes of the blood, ruſhing into the aneuriſm, or from the eroding particles, as I have already explain'd (*l*); is ſhown by the obſervation of the celebrated Maloet, given us in the ſame memoirs, for the year 1733; wherein ſome cartilaginous ſegments of the aſpera arteria, which ſerv'd in the ſtead of a poſterior paries to the aneuriſm, were found to be become already very weak, and leſs convex than natural; and two of them, in ſome meaſure, conſum'd. And as I have ſpoken to you of this

(*i*) Supra, n. 26. (*k*) Comment. Acad. Sc. Imp. Petropolit. tom. 6. (*l*) Epiſt. 18. n. 27.

obſer-

obſervation before *(m)*; I alſo there ſaid, at the ſame time, that the ſofter parts were leſs worn down than the more firm and ſolid, as they gave leſs reſiſtance to the ſtroke; but here I do not ſee that the ſame explication can be admitted of.

For if I ſay that the ligaments, which lie betwixt the vertebræ, give leſs reſiſtance than the vertebræ, and for that reaſon ſuffer leſs attrition alſo; you will immediately aſk, why then were they not found in the ſame ſtate in others, as they were in thoſe two men whom I deſcrib'd; but in the one conſum'd, in the other untouch'd? If theſe, in whom they were untouch'd, had been both of them young men, and the other old, it might perhaps have been anſwer'd, that in the former theſe ligaments gave leſs reſiſtance, and in the latter more. But not to inſiſt upon the other examples; as I certainly may upon that given by Vernojus, which is from a young man; even the firſt of mine is from a young man: ſo that it does not appear why they ſhould be deſtroy'd in the former, and not in the latter; nor yet why they ſhould not be deſtroy'd in the old man whoſe hiſtory I have given. The obſcure cauſe, therefore, of this difference; whether to be accounted for from the different nature of the eroding humour, in different bodies, or from any other cauſe; I leave for you to inveſtigate: for this letter is already ſufficiently long. Some days hence I ſhall ſend you another; but in the mean time I wiſh you much health.

(*m*) Epiſt. 21. n. 48.

LETTER the FORTY-FIRST

Treats of the Suppreſſion of Urine.

ALTHOUGH the total defect of a urinary diſcharge happens either from a diſorder of the kidnies and ureters, or of the bladder itſelf, and urethra; yet it has never happen'd either to Valſalva, or to me, to diſſect the bodies of thoſe who died from the former cauſe only. Nor is it to be wonder'd at, ſince the kidnies and ureters are double; ſo that if their office ſhould happen to be ſuſpended in one ſide, the defect is ſupplied by the other. For what is believed by many is not always true, that when either of the kidnies is inactive, the other is inactive, alſo, at the ſame time: which opi-

nion is rejected in the foregoing letter (*a*): and you will even find ſuch a number of obſervations, in the twenty-fourth ſection of the Sepulchretum (*b*) (whereto this letter relates) which may be added to the obſervations I have pointed out in the preceding; that, if you compare them with thoſe of the urine being ſuppreſs'd from a diſorder of one ſide only, you will be very clearly convinc'd that theſe latter obſervations are much more rare than the former.

For thoſe of the firſt kind will be met with in ſeveral places; not to mention where Gerard Blaſius (*c*), Iſbrandus Diemerbroeck (*d*), Ludovicus Mercatus (*e*), inſiſt upon this kind as being the moſt frequent: and if you would chooſe to add thoſe which have ſince come out, in the volumes of the Cæſarean Academy (*f*), you would certainly find none which did not relate to the ſame kind; that is to ſay, both the kidnies being either ſeiz'd with a ſphacelus, or, even, as Rudolphus Jacobus Camerarius ſaw (*g*), being affected with an unuſual loſs of tone, and flaccidity, or ſtuff'd up with calculi: or if one of them did not labour under the ſame diſorder, at leaſt conſum'd, and inactive; or its ureter obſtructed with ſand and calculi.

But the obſervations of the other kind, that is of the urine being ſuppreſs'd on account of the diſorder of one ſide only, in the cited ſection of the Sepulchretum, amount but to few; and ſo much the fewer, becauſe one of them, as that which is read under the nineteenth article of the firſt obſervation, does not belong to this claſs, as it, at firſt ſight, ſeems to do: and this we may clearly gather from the ſame hiſtory, when more fully given, not only in the twenty-ſecond ſection, under article the firſt of the thirteenth obſervation, but even in this very ſection, under the fourth article of the firſt obſervation; ſo that there was no occaſion to repeat mutilated obſervations in particular, not to ſay, to repeat them a third, and even a fourth time: for what we have under the twentieth and twenty-ſecond articles, of the ſame firſt obſervation, although they may ſeem to be different, by reaſon of the name, and number of days, being chang'd through neglect; yet that it is the very ſame, appears from inſpecting the third ſection of the firſt book, under article the firſt of the fifteenth obſervation; and in like manner under article the firſt of the thirteenth obſervation, of the twenty-ſecond ſection which I juſt now quoted, of the third book. And I could wiſh this hiſtory was the only one that is repeated in that twenty-fourth ſection, of which I have begun to ſpeak.

But you, by comparing article the eleventh of the ſecond obſervation, with article the ninth of the fourth; and, in like manner, the eighth obſervation with article the fourth of the tenth (*b*); and article the ſeventh of this laſt, with the eleventh obſervation; and to return to the firſt, and ſecond obſervation, by comparing article the ſecond of the former, with article the twenty-firſt; or article the third, which is improperly mark'd the firſt, with

(*a*) N. 15.
(*b*) L. 3.
(*c*) Obſ. 1. §. 9.
(*d*) Ibid. §. 10.
(*e*) Obſ. 2. §. 1.
(*f*) Dec. 3. a. 4. obſ. 60; a. 7 & 8. obſ. 147; a. 9. & 10. obſ. 95; & cent. 5. obſ. 22. cent. 6. obſ. 55. & 56; & act. tom. 2. append. n. 3. & tom. 3. in obſ. 6.
(*g*) Specim. experim. circa generat. part. therap. in reſolut. hiſt. 3.
(*b*) Primam de duabus intellege eodem n. x. deſignatis.

article

article the twenty-ſeventh; and, in like manner, with article the ſecond of the ſecond obſervation; you will immediately perceive how much better it would have been to have given them only once; or, if the authors themſelves had written their own obſervations more than once, and, for that reaſon, not always in the ſame words, to have added the ſecond manner of writing it immediately under the other, if it ſeem'd a thing of importance to do it.

There are, however, in this ſection ſome hiſtories of the ſecond claſs alſo, as under obſervation the firſt, article the fourteenth, and under obſervation the third, article the firſt, ſecond and third; and if you pleaſe, moreover, under obſervation the fourth, article the ſecond. But what are theſe to the far greater number of the firſt kind? Which is increas'd by ſome others, that you meet with in the additamenta to the twenty fourth ſection: for the obſervations, given in this ſection, ought to have been added, in the greater part of them, to the preceding ſection, and beſides this, others are omitted, even thoſe that are moſt obvious; as, for inſtance, that which had been given us in the Centuria of Ruyſch (*i*). It is certain therefore, it happens much more rarely that a ſuppreſſion of urine is brought on by a diſorder of the kidnies and ureters, which are double, than by a diſorder of the bladder and urethra, which are unduplicated parts: and for this reaſon it is the leſs a matter of ſurprize, that I have not yet had it in my power to diſſect the bodies of thoſe who have periſh'd from an obſtruction of theſe firſt-mention'd parts.

2. And I have been ſtill the more deſirous of diſſections of this kind, that I might have an opportunity to examine thoſe parts, in theſe bodies, from whence, through which, and to which, different authors take notice of different peculiar paſſages of the urine. For although I have propos'd an argument againſt theſe paſſages, in the adverſaria (*k*), taken from thoſe circumſtances which, it is very certain, have been obſerv'd in ſuppreſſions of urine happening from a diſorder of the kidnies; which argument has ſeem'd to me of ſo much the more weight, ſince I have obſerv'd, that it was very pleaſing, not only to others, afterwards, but even to Boerhaave (*l*) himſelf: yet I wiſh'd more fully to ſatisfy a certain celebrated man, who thought that theſe peculiar paſſages terminated in the *pelves* of the kidnies, and that neighbourhood, as many believ'd even before: ſo that, although the kidnies only are ſeen to be obſtructed by calculi, or any other impediment of this kind, yet, for that very reaſon, the mouths of theſe paſſages may, at the ſame time, be compreſs'd, and tranſmit nothing, at that time into the *pelves*, or the neighbouring ureters.

You therefore, when you ſhall be furniſh'd with an opportunity of diſſecting bodies of this kind, will, I hope, do what I intended to have done; that is to examine, with the greateſt accuracy, all the membranes which are bordering upon, or connected to, thoſe parts; for if the mouths of theſe paſſages are compreſs'd, it cannot be but the remaining tract of them muſt be ſo much the more diſtended with the ſtagnating fluid, in proportion as the orifices, which emit this fluid, are more ſhut up; eſpecially as the offices which they aſcribe to theſe parts require, and even they themſelves readily allow, theſe paſſages not to be very ſmall: although it ſeems, from one cir-

(*i*) Obſ. 15. (*l*) Prælect. ad Inſtit. §. 385.
(*k*) III. Animad. 36.

cumſtance, as if your labour would be in vain; I mean from this, that we never read of theſe paſſages having appear'd to any one in caſes of this kind, notwithſtanding a great number of bodies had been taken in by ſuch perſons, which muſt, of courſe, have diſtended theſe, or any other paſſages, that have been ſuppos'd, by others, to lead to the bladder; and notwithſtanding very accurate and experienc'd diſſecters examin'd the bodies after death.

For Franciſcus Plazzonus; to uſe the example of that hiſtory which I have ſhown to be three times repeated, in this ſection of the Sepulchretum *(m)*; either diſſected himſelf, or was preſent at the diſſection of, that monk, to whom, among other diuretics, even cantharides had been given; which had ulcerated the bladder, although empty: ſo as to convince us that the virtue thereof had reach'd thither by means of the ſanguiferous veſſels, and not by any peculiar unknown paſſages; which, together with this virtue, would have tranſmitted the diuretic potions, at the ſame time, either into the *pelves* of the kidnies, or ureters, or immediately from the ſtomach into the bladder. For this ſecond opinion was embrac'd by many, either, perhaps, on account of theſe words of Hippocrates *(n)*; or at leaſt, of a very ancient author; "if a child "ſhall have veins going from the ſtomach to the bladder which are large, "and have a power of attraction," or rather on account of theſe things which they had heard of, as happening in a true diabetes, very extraordinary examples of which you may read in Marcellus Donatus *(o)*; I mean "that "what is drunk ſhould be diſcharg'd by the urinary paſſages, without the "leaſt change whatever, preſerving the ſame colour, conſiſtence, taſte and "ſmell," as when taken in.

But if it is neceſſary, for that reaſon, to ſuppoſe ducts going from the ſtomach to the bladder; it would be neceſſary to ſuppoſe others going to the ſkin, as to theſe examples, Donatus has made no ſcruple to ſubjoin this, alſo, of a very handſome girl, who had been for a long time afflicted with fevers, in whom "the fluids, that ſhe drank down, were diſcharg'd from the precordia "by ſweat, before the cup was well taken from her mouth; and that in the "ſame quantity in which they had been taken in, and without any altera-"tion; ſo that from red wine, the linen, with which ſhe was cover'd, was "ting'd with a red colour;" and "from white broth, in like manner, with "a white colour;" and that this had been obſerv'd "for the ſpace of two "weeks." Yet in regard to theſe unknown ducts; by what way ſoever they may be ſuppos'd to paſs from the ſtomach to the bladder, or urinary paſſages; I remember that the celebrated Paſta very juſtly obſerv'd to me, formerly, in a letter, that if there really were ſuch paſſages, it muſt, of courſe, have happen'd to thoſe who abuſe quickſilver, in our country as well as others, ſo as to take near an ounce every morning, that ſome part of it, at leaſt, would have been diſcharg'd with the urine; which, however, had by no means been obſerv'd, by our phyſicians, in any one of theſe perſons.

But if you ſhould ſay, that theſe ducts are ſcarcely open in a natural ſtate; though they are dilated in fevers, from which the chief of thoſe examples of Donatus are taken; you would neither anſwer the objection of Paſta, nor obviate the other phœnomena, on account of which theſe ducts have been ſuppos'd to exiſt: and, certainly, in the firſt of Donatus, from Trin-

(m) Supra n. 1. *(n)* De Morbis. l. 4. n. 28. *(o)* De Med. Hiſt. Mirab. l. 4. c. 27.

cavellius,

cavellius, the liquor that was drunk ought rather to have conſtring'd the orifices of thoſe ducts, as the patient refus'd to drink any thing "that was "not almoſt cold."

But what ſhall we ſay, you will aſk, to a more late obſervation (*p*)? I mean of that virgin who had an aſcites, and in whom "the left kidney, as well "as the right . . . . . was univerſally ſcirrhous, and indurated; and had "coaleſc'd in ſuch a manner, that even no pelvis could be diſcover'd;" notwithſtanding this patient had diſcharg'd urine, though indeed "in a very "ſmall quantity, and limpid like fountain-water," inſtead of being "red, and "thick," as in the beginning: but ſtill, however, ſhe had diſcharg'd urine.

Was it becauſe a little quantity of the fluid ſtagnating in the belly, had paſs'd "through the pores of the bladder, which went from without in-"wards?" Or, rather, becauſe ſome ſmall part of one, or other, of the kidnies, had not been as yet, entirely indurated, and conſtricted, when ſhe laſt made water, as it appear'd to be after death; for which reaſon urine had ſtill been ſecreted through the narrow paſſages, as the unuſual limpidity of it ſeems to demonſtrate?

Certainly, it did not paſs through ducts opening into the ureters, or bladder; inaſmuch as they would have brought a much greater quantity of fluid, from the ſtomach.

3. But be this as it will; I ſhall here give you what Valſalva and I have ſeen in the dead bodies of thoſe, who, while living, had labour'd under a ſuppreſſion of urine, from a diſorder of the bladder or urethra; yet what I ſhall now give you is not the whole. For you have had in the laſt letter (*q*), and, in like manner, in the twenty-fourth (*r*), ſome of the appearances which he had obſerv'd; and ſome of thoſe that I have obſerv'd, in the fourth letter (*s*), and tenth (*t*): and in others you will have other remarks. What I ſuppos'd, then, to relate principally to this ſubject, among the papers of Valſalva, are the following.

4. A young huſbandman; whoſe two brothers, and they young men alſo, had died of acute diſeaſes, about the vernal equinox, in the preceding years; died in this manner, at the ſame time of year. Having repell'd a ſcabies by I know not what kind of ointment, his urine was ſoon after ſuppreſs'd, not without a vomiting, and pain, ſometimes, in the loins on the left ſide. However, he did diſcharge urine after this ſeveral times; but in ſmall quantity, like a ſaturated lixivium in colour, and with pain: it was in vain attempted to increaſe the diſcharge by introducing the catheter.

At length the whole body ſwell'd: and a large and laborious reſpiration coming on, he died on the day following; which was about the twenty-firſt day from the beginning of the ſuppreſſion.

The bladder and the kidnies were ſound; except that theſe laſt-mention'd parts were ſomewhat larger than their natural ſize: and the bladder contain'd about two pints of urine, ſuch as I have ſaid was diſcharg'd. And in the cavity

(*p*) Commerc. Litter. a. 1743. Hebd. 25. n. 2. ad 3.
(*q*) N. 4.
(*r*) N. 7.
(*s*) N. 19.
(*t*) N. 13.

of the belly was a ſtagnating fluid, that ſmelt like urine, though ſimilar to limpid water. This fluid, being preſerv'd in a glaſs veſſel, ſeparated into many broken parts, like what are generally contain'd in urine.

But when put upon the fire, it at firſt became turbid, and ſimilar to the whey of cow's milk, and ſoon after like milk itſelf; and, finally, concreted to ſuch a degree, as perfectly to reſemble the white of an egg: a concretion of which kind had been never before ſeen by Valſalva, in any morbid humour of the body.

In the thorax, the lungs were much diſtended with air, and connected to the pleura at the back; they were ſound nevertheleſs. The right ventricle of the heart contain'd a polypous concretion of a moderate ſize, the left contain'd one of very ſmall dimenſions.

5. What violent diſorders have been brought on, by the repulſion of the acrid particles of a ſcabies, into the blood, has been already ſhown by me *(u)*, in the caſes of two women. But in thoſe patients, theſe repell'd particles fell on different parts: in this young man they mix'd with the urine, and fell upon the kidnies and bladder: and by pricking and vellicating the internal membranes of theſe viſcera, occaſion'd a pain in both of them; by which theſe thin membranes were criſp'd up, and a reſiſtance, for that reaſon, almoſt conſtantly made to the efflux of urine: from whence the kidnies became larger, by this fluid being confin'd internally; and the bladder; either becauſe it frequently contain'd ſcarcely any urine, or becauſe it could not contract itſelf properly, or rather, becauſe it did not admit the catheter, when this was introduc'd, into the urethra; diſcharg'd nothing: and when the catheter was withdrawn, it diſcharg'd nothing, but ſeldom, and that with pain.

The matter of urine, then, being detain'd in great meaſure, in the ſanguiferous veſſels, was, at length, the cauſe of death: although it overflow'd into other parts, and particularly into the cavity of the belly; as was prov'd by the odour of the fluid which ſtagnated there. For this excrementitious fluid readily mixes itſelf with the humours, that are then ſecreted from the blood.

Therefore; to produce an example which has not, for I know not what reaſon, been added to the Sepulchretum; Malpighi *(x)*, in his preceptor Natali; whoſe ureter and kidney he found to be ſurprizingly dilated, from the urine being intercepted by an obſtructed calculus, the ſuppreſſion, which in the end prov'd mortal, laſting for many days; obſerv'd that his ſaliva carried in it the taſte and ſmell of urine, and that the halitus, tranſpir'd through his ſkin, had been of the ſame urinous kind.

And Albertini related to me, that the noble youth; the ſtructure of whoſe kidnies we ſee deſcrib'd by Malphigi, in the letter to Sponius; had not only ſpat up a ſaliva, in the ſame diſeaſe, which had the taſte and ſmell of urine, but even almoſt urine itſelf inſtead of ſaliva; as the colour, added to the ſmell and taſte alſo, teſtified; the matter of the urine flowing to the ſalivary glands in ſuch a quantity, that the cheeks and the parotid glands were tumid.

(*u*) Epiſt. 16. n. 34. & Ep. 38. n. 22. (*x*) Op. Poſth.

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By reaſon of this diſcharge, perhaps, it was that he liv'd ſo long; till, the ſuppreſſion being overcome, he made a great quantity of water: although it, nevertheleſs, happen'd to him, as it has frequently happen'd to others, when they have at length diſcharg'd urine, after a very long retention; I mean that the humours, and the viſcera, being injur'd, and deprav'd, he died not long after.

Thomas Bartholin *(y)*; when he mentions other excretions, by means of which patients who have the urine ſuppreſs'd, drag on, or preſerve life for a long time; omits that of the ſaliva which I have taken notice of, and enumerates ſtools, vomitings, and ſweats. He produces an example of ſtools in his colleague *(z)*. And inſtances of vomitings, and ſweats, though he has not expreſly produc'd any, it is eaſy to ſupply from the obſervations of others.

Thus our Valliſneri *(a)* ſaw vomiting of ſerum come on, after the tenth day of the ſuppreſſion; which ſerum reſembled urine in its colour, taſte and odour: and the virgin, who was the ſubject of this diſorder, liv'd till, many remedies having been made uſe of to no purpoſe, both internally and externally, he at length open'd the paſſages of the kidnies by giving mercury internally, and applying it outwardly.

Thus a phyſician of Mantua *(b)* ſaw another virgin troubled with the ſame diſeaſe, and a vomiting, at firſt, more than forty days; and, not long after, at leaſt for two and thirty days. Thus another *(c)* ſaw a third labour under this ſuppreſſion, and vomiting, for fifteen months; ſo that ſhe could ſcarcely be ſupported by any other means, than that of nouriſhing glyſters: till the calculus being diſcharg'd, the iſchuria, and the vomiting of urine, went off.

But where the calculi, which obſtruct the kidnies, and the ureters, cannot be remov'd; in vain, as Gulielminus *(d)* has obſerv'd in two caſes, do vomitings of urine come on: and this is to be underſtood both of other inſuperable cauſes of diſeaſe, and of other diſcharges: in a woman, therefore *(e)*, who already perceiv'd the taſte and ſmell of urine in her mouth, the vomiting of blood itſelf, and the diſcharge thereof by the noſtrils, if it was at all of uſe, was ſo far of uſe, that ſhe drag'd on life quite to the thirtieth day of the diſeaſe.

To return, however, to the excretions ſpoken of by Bartholin; he has particularly pointed out the obſervation of Carolus Piſo *(f)*, as worthy of remark, in relation to ſweats; for they were conſtant, copious, of long continuance, and ſo fœtid that the ſmell of them could hardly be endur'd: a diſcharge by the urinary paſſages, therefore, coming on again, the patient was freed from his diſeaſe. Not thus fortunately did it happen to the virgin of whom Petrus Nannius has given the hiſtory.

In her the urine had alſo been long ſuppreſs'd by reaſon of calculi, ſo that he now thought her quite loſt; when a ſweat burſt forth in an immenſe quan-

(y) Cent. 4. Epiſt. Med. 18.
(z) Ibid. & Epiſt. 21.
(a) Eph. n. c. cent. 9. obſ. 50.
(b) Hiſt. de l'Acad. R. des Sc. A. 1715. obſ. Anat. 3.
(c) Act. n. c. tom. 3. obſ. 6.
(d) Exerc. de Sang. Nat. n. 68.
(e) Eph. n. c. cent. 6. obſ. 56.
(f) De Morb. ab Aqua S. 4. c. 6. obſ. 127.

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tity, that had a urinous odour. As long as this ſweat laſted, and it laſted many days, the virgin was much better. But when this ceas'd, ſhe was carried off within a few days, by a dropſy of the thorax.

But more happy, for a time, than this was another virgin of Padua formerly, of whom Marcellus Donatus (*g*) gives the hiſtory, from a phyſician of undoubted credit. In her, not from the whole body, but only "from the "region of the ſtomach, a humour was tranſpir'd to the weight of many "pounds, reſembling urine both in colour and ſmell;" whereas not only the natural diſcharges of the kidnies were ſuppreſs'd, but the natural diſcharges of the inteſtines alſo. And theſe diſcharges were ſuppos'd to have ſupplied the defect of urine (which for ſix months before had been wholly ſuppreſs'd) that is to ſay, in conſequence of the inteſtines being then "relax'd."

And even inſenſible perſpiration ſeems to have ſupplied this defect, in a young woman, who; which is a very extraordinary inſtance, though well-known at Verona; had not excreted a drop of urine for two and twenty months, when the celebrated Zeviani (*h*) mention'd it. For in the bed-chamber of this woman an odour of urine was perceiv'd, which the bed-clothes alſo ſeem'd to exhale. In the mean while ſhe was afflicted with many diſeaſes though with none of the brain. But that virgin of Padua at length fell into a maraſmus.

Theſe obſervations I have quoted, although they in general relate to thoſe perſons, in whom the urine is retain'd, by the diſorder of the kidnies; which cauſe had alſo partly exiſted in that man whom I have ſpoken of from Valſalva: nevertheleſs they ſufficiently ſhow from whence they alſo periſh, in whom it is long retain'd, only from a diſorder of the bladder, or urethra; and yet there is not that inflammation of the bladder at the ſame time, to which, or the ſubſequent gangrene, we may aſcribe the death of the patient. To that kind I ſhould ſuppoſe this ſecond obſervation of Valſalva to belong.

6. A man, of ſeventy years of age, having labour'd under a long difficulty of making water; ſo that he diſcharg'd no urine but by the help of the catheter; finding his diſorder increaſe every day, was oblig'd to come into the hoſpital of St. Mary de Vita at Bologna. There, while the lithotomiſt was endeavouring to procure an exit for the urine, by means of the catheter, without effect, he died with a laborious reſpiration and a ſtertor.

The fibres of the urinary bladder had ſo increas'd, as to reſemble the ſtrong bundles of fibres in the heart; and that both in figure and magnitude. An excreſcence of the proſtate gland, in the form of a pear, and ſcarcely leaving any paſſage, had been affected with an inflammation in the lower part; from the continual impetus of the catheter.

The right ventricle of the heart ſhow'd the beginning of a polypous concretion.

7. It is evident that an inflammation, of that kind, could not be the cauſe of death in this man. However, to what a pitch the blood might be, by degrees, deprav'd, in a body thus weaken'd by old age, and by a very frequent retention of urine, ſo as to be confin'd to bed, it is not difficult to conjecture.

(*g*) C. 27. cit. ſupra ad n. 2. (*h*) Del flato, l. 2. c. 11.

It

It is not ſurprizing therefore, that a retention coming on, which could not be remov'd by the catheter, ſuch ſymptoms ſhould begin during the time of the fruitleſs irritations from that inſtrument, as at length carried off the patient in a ſhort time.

Even without theſe irritations, he would have died nevertheleſs: but perhaps a little later, as ſo many others have done; and among theſe a man, alſo, whoſe hiſtory I ſhall add at preſent, juſt as I receiv'd it from the ſame phyſician, whom I have commended to you on a former occaſion (*i*), I mean Mariſati.

8. A man, who lay in this hoſpital for a ſuppreſſion of urine, had already had it drawn off twice, by means of the catheter, and always in great quantity. As either the patient, or others, fear'd leſt the neck of the bladder ſhould be too much irritated by this introduction, and, for that reaſon, abſtain'd from it, death came on not without convulſive ſymptoms.

When the body was open'd, all the viſcera, and even the bladder itſelf, were found to be, as far as we could judge by the ſenſes, perfectly ſound; for the bladder was only diſtended, without any beginning of inflammation, ſo as readily to contain ſuch a quantity of urine, as three glaſs veſſels, of the ſize with thoſe that we uſe to receive blood from a vein when open'd, or even to receive urine in this country, would ſcarcely have contained.

9. To what a degree I have, more than once, found the bladder diſtended, and yet not inflam'd, not only obſervations already written to you (*k*) demonſtrate, but will alſo be ſhown by one, in particular, which I ſhall give you when I treat on the ſubject of lameneſs (*l*). Now that you may conceive how much the bladder may ſometimes be extended without any ill conſequence, I will ſubjoin what happen'd here to a woman of character, whom I very well know, and who is now in very good health.

She was in labour of her firſt child, and more than two and forty years of age. As the bones of the pelvis did not, for this reaſon, at all give way, and the lower part of that cavity was narrow, the large head of the child ſtuck there; and the urethra, and the neareſt part of the bladder, being compreſs'd thereby, the urine was abſolutely confin'd. The ſhort kind of catheter, which is made uſe of for women, was at length introduc'd after great difficulty, but to no purpoſe.

There was a neceſſity, then, of introducing one of the longeſt which are us'd for men; but leſs curv'd than in general: and now it had enter'd to the length of a ſpan, yet no urine came forth. It was neceſſary therefore, to thruſt the catheter up higher, in order to diſcharge that fluid; and by this means the urine came forth to the quantity of about four pints.

She was a very ſmall woman: from whence you will better perceive how much (which was alſo ſhown by the very high and peculiar ſwelling of her abdomen) how much, I ſay, the bladder muſt have extended itſelf; and even the ſuperior part of the bladder, ſince the inferior part was ſo compreſs'd as I have ſaid, as to be prevented from extenſion. However, the child, which was not only dead, but had even a very putrid ſmell, being ſoon after taken away, no injury or danger from the bladder remain'd.

(*i*) Epiſt. 27. n. 4.
(*k*) Epiſt. 4. n. 19. & Ep. 39. n. 33.
(*l*) Epiſt. 56. n. 12.

But if you inquire after examples of this cavity being greatly diſtended, and attend to the event which the greater part of them have had; to ſet aſide rupture, which has been found from the diſtention, even in the bladder of an ox (*m*); you will certainly find, that, according to the different diſpoſition, and nature, either of the parts, or of the blood, or of the urine itſelf, it has happen'd far otherwiſe to many, than it did to the woman in queſtion.

It is generally known that the bladder, when diſtended to a very great degree, has frequently loſt the power of contracting itſelf; and this, as you will gather from the obſervation of Mauchartus (*n*), may ſometimes happen in a ſhort time: for this author, after an iſchuria of the bladder, which had begun four days before; although after the two firſt days he had taken care that the water ſhould be drawn off more than once, and found the bladder to be quite empty in the body after death; nevertheleſs obſerv'd that reſervoir to be "very large, and not contracted as it generally is."

Nor is it leſs commonly known, that the bladder is eaſily affected with inflammation; the beginnings of which only exiſted even in this body: ſo that the inflammation itſelf in many others is found to be much more conſiderable. What is the very natural conſequence of this inflammation, you will learn from the authors who are quoted, as witneſſes of a very great diſtention, by Henricus Meibomius (*o*); who, nevertheleſs, I know not how, produces one obſervation of Hildanus as two.

For Hildanus has deſcrib'd the ſame obſervation, which he has mention'd, in a ſlight manner, in the fifth chapter of the book *De Lithotomia*, more at large in the ſecond *Centuria*, obſervation ſixty-five; and tells us there that he had found in the body of an old man after death an ulcer of the bladder which penetrated quite to the inteſtinum rectum. But that is a much more frequent conſequence of inflammation, which you will find to have been three times obſerv'd by another of the authors quoted by Meibomius, I mean Panarolus (*p*); that is to ſay a gangrene degenerating into a mortal ſphacelus.

I never remember to have ſeen a more conſiderable gangrene, after an inflammation which had ſeiz'd upon the bladder, when it had been, for a long time, diſtended, than in the body of a ruſtic which ſome unexperienc'd young men had improperly taken care ſhould be carried into the anatomical theatre at Bologna, in the year 1706, without any previous examination.

10. This man, as was found out afterwards, having been ſubject to diſorders of the kidnies, bladder, and inteſtinum ileum, had now been, for ſome days, incapable of diſcharging his urine. Wherefore, his belly being become tumid and black, he died.

The lower parts of the belly, particularly the viſcera, and among theſe the bladder, were of a blackiſh colour; as the ſcrotum was alſo: and in this was an intercepted portion of the inteſtine I have mention'd; the blackneſs extending itſelf not only into all the neighbouring parts, but even half way down the thighs: ſo that we were obliged to ſend almoſt the whole body away, very ſoon, leſt the violent putridneſs of the ſmell ſhould infect the

(*m*) Act. n. c. tom. 8. in obſ. 2.
(*n*) Eph. n. c. cent. 9. obſ. 41.
(*o*) Exercit. de Catheretiſmo theſ. 17.
(*p*) Jatrologiſm. Pentec. 1. obſ. 27.

whole

whole college. I did juſt take notice of ſome things in the kidnies, in a curſory manner, which, as I have deliver'd them in another place (*q*) I ſhall not repeat at preſent.

11. Whether the interception of the ileum preceded the ſuppreſſion of urine, or this preceded the interception of the ileum, I could not learn for a certainty. This however I know, which I have alſo aſſerted in a former letter (*r*), that to an inflammation of the ileum was join'd a ſuppreſſion of urine.

But there are alſo many other cauſes, ſituated on the outſide of the bladder, which obſtruct the urine therein. I have juſt now (*s*) ſpoken of the fœtus preſſing upon the cervix of this reſervoir, in a difficult birth: and even in utero-geſtation, particularly in the latter part of the time, there are women, ſome of whom I have very well known, who cannot make water, but in a ſupine poſture.

Add to theſe things: to paſs over thoſe which happen very rarely; for we know that a glandular body has been found growing to the female urethra, externally, "of more than the ſize of a man's fiſt (*t*);" we know that very acrid medicines applied to the pudendum, in order to conſtringe it more cloſely, the firſt by preſſing upon the urethra, the latter by exciting a very violent inflammation, have brought on a mortal ſuppreſſion of urine; which we are not ignorant has even been caus'd by the blood diſtilling, by degrees, from a veſſel of the wounded omentum, coagulating in the pelvis, and greatly compreſſing the neck of the bladder (*u*): add to theſe, I ſay, a great quantity of very hard excrements, or very tumid hæmorrhoids, which may preſs the neck of the bladder againſt the bones of the pubes, in ſuch a manner, as to prevent any of the urine being diſcharg'd.

To this caſe of the piles, relates what Giovanni Amatorio, a very old and ſucceſsful ſurgeon, in the place of my nativity, aſſerted to me, when I was a young man; I mean, that when the fibres about the lower part of the bladder are turgid with ſtagnating blood, or humour, it is of very great advantage to apply leaches to the hæmorrhoidal veins.

Thus in the grandfather, who was even then alive, of Peter Scanelli; a gentleman of rank, and one with whom, by reaſon of his fondneſs for polite learning, I was very familiar; when Amatorio himſelf had been oblig'd to draw off the urine, by the introduction of a catheter, ninety times, he affirm'd that this very obſtinate ſuppreſſion had been at length remov'd by that remedy, after many other remedies had been adminiſter'd in vain.

And as to hard excrements, the obſervation of Wepfer (*x*) is very well known: to which; as it is alſo transfer'd into this ſection of the Sepulchretum (*y*), but not without ſuch typographical errors as render it quite unintelligible; you may add another that you read in the Additamenta to the next ſection, that is the twenty-fifth (*z*).

(*q*) Epiſt. 38. n. 41.
(*r*) Epiſt. 34. n. 8.
(*s*) N. 9.
(*t*) Act. n. c. tom. 1. obſ. 201.
(*u*) Vid. Hoffm. Med. Rat. tom. 4. p. 2. ſ. 2. c. 7. in ipſo fine.
(*x*) Auctar. Hiſt. Apoplex. 13. Schol. 8.
(*y*) In append. 1. ad obſ. 19.
(*z*) Obſ. 5.

The ſame happy ſucceſs which the firſt relates from the injection of a glyſter, not only many have experienc'd in other places, but was in particular experienc'd here by a Jew, to whom no other remedies had been of ſervice. It is then, however, ſufficient to inject ſuch things as are emollient; eſpecially if there be the leaſt danger of an inflammation of the bladder, or a ſuſpicion of any convulſive ſtricture of the ſphincter thereof.

Neither of theſe circumſtances, a ſenior phyſician, who related to me two or three of his ſucceſsful cures, ſeem'd, to me, to attend to ſufficiently; for by giving ſuch things as purg'd the inteſtines pretty briſkly, he ſaid he had caus'd the ſuppreſs'd urine to be diſcharg'd, at the ſame time with the ſtools.

By this means, ſaid he, if I had not caus'd any real diſcharge of urine, yet at leaſt the more fluid I had drawn out from the inteſtinal paſſage, ſo much leſs would, of courſe, have flow'd down by the kidnies, in order to diſtend the bladder more and more: and the fluid, with which the bladder was diſtended, was excited at the ſame time; as by ſtimulating the inteſtinum rectum, I could not avoid ſtimulating the fibres of the neighbouring bladder to contraction in like manner; and in great meaſure reſtoring to them their loſt power.

But he did not ſufficiently obſerve, that no part of the bladder was more cloſely join'd with the inteſtinum rectum, than the lower part; or if you pleaſe the beginning of the urethra: nor did it occur to him what muſt therefore be the conſequence, if this part ſhould be, at that time, affected with any beginning of inflammation, or convulſion.

It is true, I do not diſallow that the bladder, at one time, loſes its power of contraction from a paralyſis; and, at other times, from the diſtention itſelf. But I ſay this, that the cauſes of a ſuppreſſion of urine in the bladder ought to be very carefully diſtinguiſh'd: nor are we to imagine that the power of contraction, inherent in the muſcles of the bladder, is always ſo eaſily and ſo ſoon taken away by diſtention; as we have gather'd above *(a)* from the example of Mauchartus.

This is demonſtrated; to take no notice of other things; by the dog which Boerhaave diſſected *(b)*: for in this animal; although the bladder was extremely full of urine, that had been retain'd already, for the ſpace of three days; when the bladder was punctur'd with a ſlight wound, " the urine ne-" vertheleſs ſprang forth to a great height: and the bladder contracted itſelf " to ſuch a degree, that ſcarcely any cavity remain'd.

12. There are alſo many other cauſes, which, as they have it in their power to retain the urine in the bladder, ſo they alſo forbid the uſe of thoſe ſtimuli, whereof I have ſpoken; as, for inſtance, that which I know to be in the place of a domeſtic remedy with ſome: I mean the application of a tile, or brick, which has been previouſly immers'd in cold water, to the ſoles of the feet of a perſon who has a retention of urine: and this remedy a phyſician, that was a friend of mine, imitated with a happy boldneſs, when he was a young man, by applying ice itſelf to the feet for a little time.

(*a*) N. 9. (*b*) Prælect. ad Inſtit. §. 366.

For, although theſe things may poſſibly excite the ſtupified power of the bladder, by ſtimulating the extremities of the crural nerves; you, without doubt, are aware how noxious theſe irritations may be, where the retention of the urine has begun from the acrimony thereof: or where; according to the conjectures of the very diligent Pujati (*c*), and the obſervations of the very experienc'd Benevoli (*d*); the bladder is depriv'd of that mucus, wherewith it is ſmear'd over to defend it againſt the too great ſtimula of the urine.

I ſay nothing of the bladder itſelf falling down into the ſcrotum, although I have learn'd, from the time that my friend Georgio Georgi; a phyſician of great eminence, at preſent, among the inhabitants of Peſaro; wrote to me, that this is not ſo rare as was ſuppos'd by Mery (*e*); who, when he deſcribes it as having been ſeen twice by him, confeſs'd that he did not know of any author who had made mention of it.

For I have certainly ſeen it taken notice of, from Platerus, in this ſection of the Sepulchretum (*f*); and in the laſt foregoing ſection, that is the twenty-third (*g*), from Bartholin: and I have alſo read of it in Ruyſch (*h*), who ſaw it more than once (*i*); as is juſtly refer'd to by Chriſtian Andreas Kochius (*k*), where he alſo mentions another obſervation of a caſe of this kind, of Boerhaave's: to which, and the others, to omit here the analogous prolapſus of the bladder in women (*l*); of which, and the ſigns thereof, you may, in the mean while, conſult Mery himſelf (*m*) and the celebrated Baſſius (*n*); you will alſo add that which the very learned Valcarenghus (*o*) made upon a nobleman.

But if this caſe be rare; in which, when it happens, it is in our power (and this is the proper and pathognomonic ſign of the diſeaſe) to diſcharge the urine from the bladder, which the patient raiſes up with his hand, together with the ſcrotum, or compreſſes; there are others that are frequent, as thoſe from a pretty large calculus: and if we attend to Hoffmann (*p*); who explains one of his obſervations (*q*), and diſſections, in this manner in particular, from a ſpaſm of the bladder itſelf; others that are leſs frequent; as from the external coats of the bladder, as was ſeen by the ſame author (*r*), being eroded, and very much lacerated, by a fœtid pus, which had fallen down into the pelvis from the left kidney, that was entirely conſum'd and deſtroy'd by an ulcer, or even as from tubercles; there are, I ſay, other ſuppreſſions of urine in the bladder, wherein, not only no aſſiſtance is given by the application of ſtimuli, but much detriment muſt be the conſequence.

And there are tubercles ſometimes in the bladder, or at its neck; although, as is clearly demonſtrated by Benevoli (*s*), whom I have quoted, even excellent phyſicians have been deceiv'd in ſuppoſing them. There are, I ſay: for

(*c*) Dec. obſ. 3. n. 5.
(*d*) Diſſert. 2.
(*e*) Mem. de l'Acad. R. des Sc. a. 1713.
(*f*) Obſ. 17. §. 4. in Schol.
(*g*) Obſ. 4. §. 4.
(*h*) Cent. obſ. 98.
(*i*) Adverſ. Anat. dec. 2. n 9.
(*k*) Affect. in libr. & cæt. rar. Deſcr. in Ratiocin.
(*l*) Vid. tamen & Epiſt. 43. n. 14.
(*m*) Mem. cit.
(*n*) Dec. 3. Obſ. Anat. Chir. 2.
(*o*) Diſſert. de Saxis, Acub. & cæt.
(*p*) C. 7. ſupra ad n. 11. cit. Epicr. obſ. 1.
(*q*) Ibid.
(*r*) Ibid. obſ. 8.
(*s*) Diſſ. 2. cit.

although Ruyſch (*t*) repreſents only one example; yet that many are to be met with, he ſufficiently ſhows in the ſubjoin'd obſervation (*u*).

What tubercles were ſeen by Drelincurt (*x*), what an excreſcence was found by Sylvius (*y*), what a caruncle by Tulpius (*z*), by Smetius (*a*), by Hildanus (*b*), you have, not to lead you too far, in the Sepulchretum itſelf, where you will alſo certainly find other things relating to the ſame ſubject. And perhaps you will ſtill remember that which I formerly deſcrib'd in the firſt *Epiſtola Anatomica* (*c*), as being found by me, as well in the urinary, as in the biliary bladder.

And although it is ſuperfluous to produce examples of tubercles, which ariſe in the meatus urinarius, ſince mention is made of them in the very aphoriſms of Hippocrates (*d*), and of the ſuppuration whereby they are remov'd; yet I ſuppoſe it will not be unpleaſing to you, if to the hiſtory of that nun, who was preſerv'd for the ſpace of ſixty-ſix days, by the help of nouriſhing glyſters, under the attendance and care of Rammazzini (*e*); I add this alſo, which I receiv'd from him: I mean that the ſame virgin; when ſhe was, afterwards, ſeiz'd with a ſuppreſſion of urine, and refus'd the aſſiſtance of the catheter; after the caſe had gone on to an extremity, by the delay of ſome days; had begun to diſcharge her urine, together with a ſmall quantity of pus, without any pain, except of the urethra: and by this had ſhewn the cauſe of the diſorder to be a tubercle form'd in the urethra. And as the well-tim'd ſuppuration, of this tubercle, took away the diſeaſe, ſo the irritating powers, of the remedies ſpoken of above, would have increas'd it.

But tubercles of this kind may, however, eaſily be chang'd into pus, and leave the paſſage free and open. But who can have any reaſonable hope, that ſcirrhous tumours, or tumours verging to the hardneſs of a ſcirrhus; ſuch as are often found in the proſtate gland, or frequently grow out therefrom; may be eaſily remov'd by nature herſelf, not to ſay by art? And ſuch I believe that excreſcence of this gland to have been which is deſcrib'd above (*f*), from the obſervation of Valſalva: and of the ſame kind, without doubt, was the tumour of the whole proſtate, in the following obſervation of mine.

13. A fellow-citizen of mine, of noble birth; who was more than ſixty years of age, of a ſquare and robuſt body, had a red face, a habit inclining to fatneſs, and was troubled with a hernia; had labour'd, when a young man, under a virulent gonorrhœa, and had always drunk very freely, and often even of pure wine.

Though he alſo made a great quantity of water, and very frequently; yet the year before he had been attack'd with a kind of ſlight retention of urine. And in the year 1710, on the fourth of March, it was almoſt ſuddenly ſuppreſs'd.

(*t*) Cent. obſ. fig. 62.
(*u*) 78.
(*x*) Sect. hac 24. obſ. 13. §. 2.
(*y*) Ibid. obſ. 10. §. 6.
(*z*) Ibid. obſ. 8.
(*a*) Sect. 25. obſ. 1. §. 4.
(*b*) Ibid. in Schol. ad §. 2.
(*c*) N. 43.
(*d*) 82. ſect. 4; & 59. ſect. 7.
(*e*) Conſtitut. Epidem Urb. a. 1691. n. 22.
(*f*) N. 6.

A phyſician, who was his kinſman, took great pains to adminiſter relief by glyſters, baths, and blood-letting from the hæmorrhoidal veins; and even by ſuch remedies as increas'd the inteſtinal diſcharges, which were at the ſame time diminiſh'd: but to no purpoſe. He therefore, at length, order'd the catheter to be introduc'd: which was done without great difficulty, both then, and afterwards. And at each time of introducing it, almoſt ſeven pints of urine were drawn off, on the firſt days from the time it began firſt to be introduc'd; notwithſtanding he had but little given him to drink.

On the intermediate days, for he liv'd, in all, about fifteen, the quantity was ſomewhat leſs: and on the laſt days the quantity again amounted to ſeven pints. And on the firſt days, indeed, he perceiv'd ſome inclination to make water; as he alſo did on the latter days: but none at all in the intermediate days. A little blood was ſometimes ſeen in the urine; and ſometimes, ſome ſmall pieces of membranes as it were; on the laſt days a pain of one ſhoulder came on: a fever on the laſt but one: and on the laſt, in the morning, when the catheter was withdrawn, after taking away the urine, it was obſerv'd to be ting'd; which was a circumſtance that had never happen'd before; juſt as if it had been dipp'd in a vitriolic fluid.

On that day, when the evening began to draw on, behold a rigor, and a tremor came on; though the ſkin continu'd warm; and from hence the pulſe was obſcur'd: and as ſoon as it began to be diſcover'd again, not without intermiſſions; another tremor came on: and at the fifth hour of the night the patient died.

Being aſk'd to attend the diſſection of the body, I attended, together with other phyſicians, about the beginning of the night of the following day: at which time I receiv'd the account I have given you, from the phyſician who had attended the patient while living; and from the ſurgeon and others; all of whom confirm'd the relation.

We found the peritonæum to be livid; particularly in the hypogaſtrium; and the inteſtines, in general, to be of a livid hue: in the extreme part of the fundus of the diſtended bladder, the blood-veſſels were externally turgid with blood; and the internal coat was rediſh in ſeveral places: but all the coats were much thicker than they naturally are; for which reaſon the bladder, even when emptied of its urine, retain'd an unuſual magnitude.

Before the whole of the urine was diſcharg'd from that cavity, we obſerv'd a coagulum, of no very ſmall ſize, to be ſwimming freely about, and to reſemble nothing more than a ſemi-lacerated hydatid; but when I examin'd it more attentively, it ſeem'd to be a ſlender polypous concretion, which reſembled ſmall membranes involv'd one in another, and collaps'd: and thoſe who ſaw it affirm'd that it was of the ſame kind with thoſe ſmall fragments, which had ſometimes appear'd in the urine, after being drawn away.

When, therefore, we came to inquire into the cauſe of this ſuppreſſion, it appear'd to be at the lower part of the bladder. That is to ſay, the proſtate gland was univerſally ſwollen out in a preternatural manner, and had attain'd to ſuch a ſtate of hardneſs, as to ſeem to thoſe who cut into it, to conſiſt of the ſubſtance of cartilage and ligament mix'd together as it were.

This tumefied gland was of a white colour; except that, in ſome places, but particularly on both ſurfaces, it was blackiſh, from blood ſtagnating in the veſſels; and that moſt on the right ſide, where the ſcrotum was, in part, diſtended with a large enterocele.

14. In this cauſe of ſuppreſſion, which has been juſt deſcrib'd, all of us, who were preſent, eaſily agreed: not only becauſe we were not ignorant that the ſame had been met with, at other times alſo, by eminent men, and acknowledg'd; as will be ſaid afterwards *(g)*; but alſo becauſe it was eaſy to conceive, that when the patient began to be affected with a tumour, and hardneſs, of the proſtate, he began alſo to be attack'd with the beginning, as it were, of a retention of urine: and that when the tumour was, at length, increas'd to ſuch a great degree, an unuſual ſlowneſs of circulation, through this gland, and round about this gland, coming ſuddenly on, the canal which paſs'd through it, could not be ſufficiently open'd for the diſcharge of the urine; unleſs by introducing the catheter which was a ſolid body.

Nor would I have you ſay, that the blood, which was diſcharg'd by the application of leaches to the neighbouring veins; a remedy that I have ſpoken much in praiſe of above *(h)*; ought to have recover'd the former celerity of motion; and by this means have diminiſh'd the tumour. For in a full habit of this kind, blood not having been previouſly taken away from the arm, a greater quantity of this fluid eaſily flow'd to that part, from whence it ought to have been repell'd; by reaſon of leſs reſiſtance being made to its influx.

I omit inquiring whether, on account of the baths alſo, which had been then made uſe of, this might happen; or even, whether a ſtimulus was added by thoſe medicines, in particular, that were given to increaſe the inteſtinal diſcharges. I alſo omit this inquiry; whether the urine began to be drawn off later than it ought to have been: which was an objection I heard commonly made; at that time more than any other; though I ſaid nothing about it myſelf, according to my uſual cuſtom; as every reflexion of this kind is ſuperfluous, and uſeleſs to a patient who was already dead.

The cauſe of this objection, however, does not ſeem to be unworthy of our notice. It had happen'd in thoſe days, that four other citizens, beſides him of whom I have ſpoken, were ſuddenly ſeiz'd with the ſame diſorder; and that what the celebrated Baſſius *(i)* obſerv'd afterwards, at Hall in the dutchy of Magdebourg, in the ſpring of the year 1730, "to be quite unheard of;" I mean that a true gonorrhœa ſpread about epidemically; as he teſtifies, by producing four obſervations; we obſerv'd in the ſpring of the year 1710, at Forli (a city not abounding with inhabitants, in proportion to the advantages it enjoys, nor as it formerly did) in regard to an iſchuria veſicalis as it is call'd; five obſervations of which I could produce that were made within a few days, by-way of an uncommon inſtance, which perhaps might be explain'd nearly in the ſame manner that he has explain'd his, or, at leaſt, in great meaſure.

The city therefore, ſeeing that out of our five citizens, one of whom I attended myſelf, four had recover'd; and he only, whoſe diſſection you have

(g) N. 17. *(h)* N. 11. *(i)* Dec. 4. obſ. anat. chir. 5.

read,

read, had died; commended the foreſight, and prudence, of the others, in the early introduction of the catheter, and blam'd the delay of this phyſician in queſtion: but whether juſtly or unjuſtly, I leave to you to determine.

Yet as there are different cauſes of diſeaſes in different perſons, and different ſtates of body, of the parts, and of the urine; ſo there may be different reaſons, in different patients, why a phyſician ſhould take any ſtep inſtantly, or delay to take it for ſome time. I confeſs I was not ſorry for having made uſe of the catheter ſo early, in my patient, after more eaſy remedies being tried to no purpoſe; although to the ſurgeon it ſeem'd ſo premature, that, by reaſon of the very ſmall tenſion of the hypogaſtrium, he aſſerted that there was no urine in the bladder.

But he was immediately refuted: though not ſo much by the ſigns of a renal iſchuria being abſent, and by the other ſigns of a very troubleſome veſical iſchuria, being preſent, as by the thing itſelf.

For no ſooner was the catheter introduc'd, but it brought off three pints of urine, to the great eaſe of the patient; who was ſurpriz'd how it could happen, that he, who drank ſo little, ſhould have ſuch a quantity of urine in his bladder: being ignorant, that, with this ſuppreſſion, an affection of the diabetes kind, as it were, is frequently join'd; which conſideration has ſometimes led me to doubt, whether this diſorder of the diabetes kind, were not the cauſe of the ſuppreſſion: I mean by ſo haſtily, and ſurprizingly, diſtending the bladder, while the patient ſleeps, that when he awakes, the muſcular coat thereof is no more able to contract itſelf.

But whether the patient; into whoſe bladder our Fabricius ab Aquapendente (*k*) ſays that ſo great a quantity of urine had flow'd (while nature was bringing about a criſis) that, he not being able to diſcharge it, there was a neceſſity of drawing it off by the catheter; whether this patient, I ſay, ſlept like mine; or whether, as he lay ill of a continual and dangerous fever, his ſenſations were become obtuſe; as we do not certainly know, ſo we are at liberty to ſuſpect either the one or the other: for it does not, otherwiſe, appear, why he did not diſcharge his urine from the time it began to flow, pretty plentifully, into the bladder; and why, by continuing this diſcharge, he did not take care to prevent the whole quantity, that was ſecreted, from being retain'd in the bladder.

15. That you may not inquire after examples of the conjunction of both theſe diſorders, which I ſpoke of juſt now among other authors; that is to ſay, of the diabetes and the iſchuria, of which kind in particular was that of Hildanus in the Sepulchretum, which having ſome reference to the caſe of the old man mention'd above (*l*), is transfer'd into this ſection under article the eighth of the tenth obſervation, but of that which ſtands firſt in order (for another obſervation immediately ſucceeds, which is, through careleſſneſs, mark'd out by the ſame number) and that I may not add other more recent examples which have come to my knowledge; it is ſufficient to read over again the hiſtory in queſtion (*m*).

You will ſee, notwithſtanding the patient then drank but little, how great a quantity of urine flow'd down into the bladder. I am ſorry we did not ex-

(*k*) De Chirur. Operat. ubi de urin. Supreſſ. (*l*) N 9. (*m*) N. 13.

amine

amine his kidnies and liver. Yet I am not ſorry, for this reaſon; becauſe I ſhould have hop'd that I could learn out the cauſe of thoſe circumſtances which happen in the diabetes.

For to ſet aſide the more wonderful things that are related of the true diabetes *(n)*, ſome of which, I think, ought not to be admitted without a cautious examination; it is certainly not leſs ſurprizing to conſider what has, beyond a doubt, happen'd in two virgins in the ſpurious diabetes, as it is call'd; and that even in our age, and neighbourhood, at Venice *(o)*, and Bologna *(p)*; ſo that one of them, within ninety-four days, diſcharg'd three thouſand ſix hundred and ſeventy-four pints of urine: and the other, within ninety-ſeven days, diſcharg'd four thouſand one hundred and ſeventy one pints of the ſame fluid; whereas both of them not only drank little, or nothing, but even, almoſt like thoſe who labour under a hydrophobia, were extremely thirſty, and abhor'd the ſight of any kind of liquor whatever.

You certainly perceive, that, whatever morbid appearances may be found in the kidnies, or liver; for Mead *(q)* aſſerts that "ſomething ſteatomatous" had been "always" found, by him, in this laſt-mention'd viſcus, by diſſecting the bodies of thoſe who had died of a diabetes; you certainly, I ſay, perceive, that it cannot for that reaſon appear, from whence, I do not ſay ſo great a quantity of fluid, but even a quantity leſs by one half, is to be accounted for.

For which reaſon, they who have undertaken to explain the caſes of theſe virgins, have been oblig'd to do the ſame thing that Mead has, at length, expreſly done *(r)*; and that phyſicians had already begun to do *(s)* in the fifteenth century; I mean to have recourſe to the air, and, with greater propriety than thoſe ancient authors, to deduce this immenſe quantity of urine, not from the air itſelf, but from the aqueous particles ſwimming therein.

It therefore chagrines me, that I did not examine into the ſtate of thoſe viſcera which I have mention'd: not becauſe I might have had an opportunity of obſerving the cauſe of the ſurprizing caſes of this kind, but becauſe I might have, in part, obſerv'd ſome traces of the cauſe of a diabetes not ſo immoderate; or, perhaps, rather ſome traces of the effects. And I am ſo much the more diſpleas'd with myſelf, as there are very few diſſections of perſons who died after that diſeaſe.

This circumſtance appears from the ſhortneſs of that ſection of the Sepulchretum, which profeſſedly treats of the diabetes; I mean the twenty-ſixth. Of the obſervations, however, contain'd therein; which are, in number, no more than five; there are three which either repreſent both the kidnies as being very flaccid; or one of them, at leaſt, as collaps'd into itſelf, or almoſt conſum'd.

With theſe agree the two obſervations of Ruyſch *(t)*, which I wonder were not added; for Hoffmann *(u)* had not publiſh'd his at that time. Which

(n) Vid. ſupra, n. 2.

(o) Caſo propoſto da Bartol. Barati & Lodovico Teſti con la Riſpoſta di queſto.

(p) Comment. de Bonon. Sc. Inſtit. t. 1. ſub. tit. Medic.

(q) Expoſ. Mechan. Venen. Tent. 1.

(r) Monit. Med. c. 9. ſect. 2.

(s) Vid. Marc. donat. c. 27. ſupra ad n. 2. cit.

(t) Obſ. addit. ad Dilucid. Valvular 13. & cent. obſ. 13.

(u) Conſult. Med. cent. 2. caſ. 85.

likewiſe;

likewiſe; although it alſo ſuppoſes the diabetes to proceed from a previous retention of urine in the kidnies, and ureters, from whence a great quantity thereof returns back into the blood, and muſt of courſe be again ſecreted, in a great quantity, when the cauſe of the retention is remov'd; nevertheleſs brings us back to this ſuppoſition, that the pores of the kidney were relax'd, by this very retention, and return of the urine; as in a certain Count, who had labour'd under a diabetes, not only the kidney on the right ſide was enlarg'd to more than double the ſize of that on the left, but the ureter appear'd to be extremely dilated, almoſt to the ſize of a common ſauſage.

And I myſelf alſo; though I would by no means follow this explication in all caſes; as in all a retention of urine does not precede, and the quantity, in which many diſcharge it, far exceeds whatever might be retain'd and return'd into the blood; in the caſe of the man, nevertheleſs, whoſe hiſtory I have given, and other caſes ſimilar thereto, ſhall follow it without any difficulty: as they not only ſecrete a much leſs quantity of urine, and ſecrete it after retention; but, in this man in particular: becauſe; as he was always us'd to drink a great quantity, and make a great quantity of urine, before his iſchuria came on; the kidnies ſeem to have been lax to a conſiderable degree, even before the attack of the diſorder.

But what miſchief had been added by the fluid; which, when he at laſt drank but little, the kidnies tranſmitted in ſo large a quantity; I could perhaps better conjecture, if I had examin'd all the different urines.

For as to their bringing on ſome ſtimulus to diſcharge the bladder of its contents, on the firſt and the laſt days of the diſeaſe, and none in the intermediate days; this might much more eaſily happen from their quantity, than from their nature; ſince the fluid was ſecreted in much leſs quantity, in the intermediate days, and in a greater quantity on the firſt, and the laſt: unleſs you ſhould rather chooſe to ſuppoſe, that the ſenſation of the bladder had been blunted, by the frequent diſtention; ſo that in the intermediate days it was no more affected, till, by reaſon of the patient's drinking but a ſmall quantity, and by reaſon of a large quantity of fluid being ſecreted from the blood, the urine, at length, became ſo much more acrid, as even to excite in ſome meaſure the obtuſe ſenſations of the bladder: at which time it alſo began to excite ſome inflammation, here and there, in that viſcus.

16. But if I had ſeen any eroſion, as well as inflammation, on the internal ſurface of the bladder, I ſhould perhaps have examin'd leſs into the nature of that coagulum, which had the form of a membrane: and which, being found in the urine, contain'd in the bladder after death, I ſuppos'd to be a polypous concretion; as I might then have ſuppos'd it to be made up of lamellæ, that had fallen off from the internal membrane: for the controverſy which, as I have heard, did at length, ariſe ſome years ago, was not agitated at that time; I mean whether this circumſtance could poſſibly take place without a hæmorrhage that could not be appeas'd.

But certainly, a hæmorrhage of this kind had not happen'd in the matron mention'd by Willis (*x*), who having, long before death, diſcharg'd from her

(*x*) Diſſ. de Urin. c. 5.

urethra, " a thick and broad membrane, fill'd with ſandy matter;" it appear'd from the diſſection of the body, that this membrane " was a part of the " internal coat of the bladder:" nor did it afterwards happen in two women, each of whom diſcharg'd, from the urinary meatus, a large membrane that was examin'd by Ruyſch *(y)* and Boerhaave *(z)*; and one of them " ſprink- " led over, as it were, with ſmall calculi."

And it is not to be ſuppos'd, that ſuch men had taken *pſeudo-membranæ*, or falſe membranes, for true ones; eſpecially as Ruyſch had taught *(a)*, many years before, the manner in which not only nature, but even art, might make falſe membranes: and had himſelf made them.

Be this as it will, however; that certainly was not a falſe membrane, which Rohault *(b)* had before ſeen diſcharg'd from the ſame paſſage, in a man; as he found three portions of it only, to be of ſuch a large ſize, that he did not doubt but they had made up two third parts of the internal membrane of the bladder: for it was furniſh'd with regular blood-veſſels: and ſo far was there from being any hæmorrhage join'd with it, which could not be reſtrain'd, that the urine never appear'd to be ſo much as tinctur'd with blood.

It is true, I do not contend that whatever comes out of the bladder in the form of a membrane, is really a membrane; as I did not judge it to be ſo in my fellow-citizen. But this I contend for; that the marks of membranes are nevertheleſs ſometimes ſo manifeſt, that we cannot argue againſt the opinion of thoſe very experienc'd men who examin'd them, and took them for real membranes: nor are we immediately, and upon every occaſion, to go ſo far as to deny the facts, becauſe we cannot conceive how ſome things can happen without the moſt violent, and even the moſt fatal ſymptoms. I would therefore have you ſuppoſe what I have ſaid on a former occaſion in a ſimilar controverſy, upon any internal membrane abſceding *(c)*, in great meaſure to take place here alſo.

17. I now come to the cauſe of the ſuppreſſion; which was found to conſiſt in the proſtate gland being very tumid, and hard. I had learn'd that this cauſe was not uncommon, from the obſervations of thoſe who are quoted in the Sepulchretum; that is to ſay of Riolanus *(d)* Muraltus *(e)*, Dolæus *(f)*, and even, as I underſtand it, of Reiſelius alſo *(g)*: I have not ſaid from thoſe of others likewiſe and among theſe, of him who ought to have been nam'd in preference to the reſt, that is of Parey *(h)*, becauſe we do not here conſider the magnitude only, but the ſcirrhous hardneſs alſo.

And I have ſince been confirm'd in the opinion, both by obſervations of this kind, that I have heard, and read, and ſuch as have been made ſince the others. I have heard of it in two men of note here at Padua, who were very well known to me. And I have read of it, not only in other authors, but particularly in the celebrated Heiſter *(i)*: and if you attend to the increas'd

(*y*) Adverſ. Anat. Dec. 2. n. 9.
(*z*) Vid Kochii cit. ſupra ad n. 12. deſcript. in hiſtoria.
(*a*) Theſ. Anat. 7. n. 39.
(*b*) Hiſt. de l'Acad. R. des Sc. A. 1714. obſ. Anat. 1.
(*c*) Epiſt. 31. n. 20.
(*d*) Sect. hac. 24. obſ. 17. §. 5.
(*e*) Sect. 25. in additam. obſ. 16.
(*f*) Ibid. obſ. 17.
(*g*) Ibid. obſ. 18.
(*h*) Sect. ead. obſ. 1. §. 6.
(*i*) Inſtit. Chirurg. p. 2. ſ. 5. c. 44. n. 1. & Diſſ. de Anat. Maj. in chir. neceſſ. c. 1. ſ. 4. §. 3. an. 4.

bulk

bulk of the gland only, I read of it, likewiſe, in the works of two of my moſt reſpectable friends, Valliſneri (*k*), and Benevoli (*l*); to whom you may join Riedlinus (*m*).

But the whole proſtate gland is not always tumid. For frequently, only the ſuperior circumference of it either grows out on every ſide, or on a particular part; and ſwells to ſuch a degree, as to prevent the excluſion of the urine. I think I can point out examples from the Sepulchretum, of its being ſo tumid as to have this effect: and I have many obſervations of its beginning to grow out: and theſe, that you may know what are the ſmall beginnings of great diſorders, I will take the trouble to ſubjoin here, in order, after the former.

Rhodius (*n*) deſcribes an old man, in this ſection of the Sepulchretum, in whom the diſcharge of his urine had been render'd very difficult by degrees; and finally, mucus being added, was entirely obſtructed; by "a callous "appendage growing internally to the orifice of the bladder alone: and ſtill "more by the internal membranous circumference of the orifice growing "out into the ſize of a joint." He certainly might have deſcrib'd the caſe more clearly; as another likewiſe, might have done, by whom you will read the ſame orifice of Caſaubon, who was ſo much troubled with diſorders of the bladder, deſcrib'd in the next ſection of the Sepulchretum (*o*); which deſcription is moreover render'd obſcure by typographical errors.

But if I rightly conceive of what both of them have ſeen; the circumference of that orifice, which is made by the upper part of the proſtate, was rais'd up by too great a protuberance of the gland. And I have ſeen that upper circumference, of the ſame gland, beginning to grow out on all ſides; in an old man whoſe hiſtory I ſhall ſend you when I treat of fevers (*p*). And I believe that which is given in this ſection (*q*), from Gaſſendus, of "a ca-"runcle, or callous ſubſtance, at the ſphincter of the bladder, that, being "lunated in its lower part, and almoſt as thick as the third of an inch, ob-"ſtructed the orifice of the meatus," to relate to a part of this circumference.

And although you have already had an example, from me, of this incipient caruncle, in the thirty-ſeventh letter (*r*); and are to have another alſo, in one of the following letters (*s*); yet I have a mind to add a third here, in conſequence of its being ſhort, and relating, in general, only to this circumſtance.

18. A huſbandman, of ſeventy-five years of age, had died in this hoſpital of an aſcites, in the beginning of the year 1741; which was the time when I was demonſtrating, anatomically, to the ſtudents, the organs deſtin'd to the ſecretion of the urine and ſemen.

Theſe organs, therefore, were taken out from the body, and were the only parts I examin'd. And therein I not only met with ſome other appearances that are not very frequent, though not morbid, which will be taken notice of elſewhere; but I obſerv'd the following things in particular, which had a relation to diſeaſe.

As the ſcrotum was ſwell'd, as it frequently is in an aſcites, there was a great quantity of water in the cells of the dartos, and but little within either

(*k*) Opere t. 3. f. 3. oſſ. 21. 22.
(*l*) Diſſert. 2.
(*m*) Eph. n. c. Dec. 3. A. 9. & 10 obſ. 148.
(*n*) Obſ. 12. §. 3.
(*o*) Obſ. 3.
(*p*) Epiſt. 49. n. 18.
(*q*) Obſ. 12. §. 10.
(*r*) N. 30.
(*s*) Epiſt. 43. n. 24.

tunica vaginalis: notwithſtanding from the albuginea, where it inveſts the teſticle, ſuch ſmall bodies were protuberant, as are generally look'd upon, by me, to be the remains of ruptur'd hydatids.

And when the anterior paries of the bladder was cut aſunder longitudinally; in that part of the oppoſite paries, which is neareſt to the orifice, and in the very middle of this part, a roundiſh protuberance appear'd: being of the bigneſs of a ſmall grape, cover'd over with the internal coat of the bladder. What this protuberance was I readily ſuppos'd; and by forcing the knife into it, I cut through this and the contiguous proſtate gland, at the ſame time, lengthways, and ſhow'd that it was of the ſame nature with that gland: that it was very evidently continued from it; and that there was no doubt, but, if it had grown out to a greater degree, it muſt have been a very conſiderable impediment to the diſcharge of the urine.

19. If you attentively examine thoſe examples which I have pointed out from the Sepulchretum (*t*), and that which I have produc'd above (*u*), from Valſalva, and mine; you will obſerve that they were all from old men: and, in like manner, if you examine all my obſervations in which there was the beginning of a caruncle, you will find that this was found to grow out in the very middle of the internal, and upper, circumference of the gland, poſteriorly; but whether all theſe things happen'd by chance, or otherwiſe, future obſervations will ſhow.

In the mean while, you may add, to theſe other examples, that old phyſician, whom one of the obſervations, refer'd to in Valliſneri (*x*), ſhows to have had the whole proſtate gland tumid indeed, but increas'd with a particular lobe, as it were, from its glandular ſubſtance; which roſe up within the bladder, in the ſhape, and ſize, of a walnut: not on the anterior part, but on that which lies adjacent to the inteſtinum rectum.

Yet that roundiſh protuberance of the ſame gland, which is taken notice of in the Adverſaria (*y*); except that it rais'd itſelf up from the external circumference, and ſeem'd as yet to be in a natural ſtate; that protuberance, I ſay, occupied, in like manner, the middle and upper part poſteriorly.

However, thoſe internal excreſcences of this gland that are preternatural, are not always ſimple, but ſometimes even in a double ſtate; of which kind were thoſe found by Thomas Bartholin, at Padua, that he deſcribes under the appearance of "two tubercles, conſiſting of a white and glandular ſubſtance, "of the figure and ſize of the teſtes; riſing up equally above the foramen, "within the bladder; yielding to a ſyringe when introduc'd, but falling im- "mediately back into their former ſituation when that was withdrawn;" as you have it in this twenty-fourth ſection of the Sepulchretum (*z*).

Theſe two tubercles Terraneus (*a*) would never have taken for Cowper's glands (which he ſuppos'd to be diſcover'd by him) ſwell'd to a conſiderable degree, if, when reading Bartholin, he had taken notice that they were found "in the bladder." But it is probable that he did read the paſſage: and I wiſh this was the only thing I could accuſe him of; ſince being deſirous of collecting obſervations from any author, and tranſcribing them, he has told us

(*t*) N. 17.
(*u*) N. 6.
(*x*) Supra, ad n. 17.
(*y*) IV. Animad. 14.
(*z*) Obſ. 12. §. 9.
(*a*) De Glandul. c. 5.

that

hat this obſervation of Bartholin is to be found " in century the firſt, hiſtory ' the twenty-third ;" whereas it is really to be met with in the ſecond century, hiſtory the fifty-ſecond.

But if theſe tubercles had grown out from the proſtate gland, as their nature, colour, and ſituation, demonſtrate; and, as the two others, which I have already deſcrib'd to you (*b*), in ſome meaſure ſhow; I have alſo a recent example of this gland beginning to ſhoot out, into two caruncles, within the bladder. But this example, as for another reaſon it belongs to the next letter (*c*), I will delay to produce till then. And that letter will be long, in the ſame proportion as this is ſhort. Farewell.

(*b*) Epiſt. 39. n. 33. (*c*) Vid. n. 11.

LETTER the FORTY-SECOND

Treats of the difficulty of making Water, the Ardor-urinæ and other Diſorders in which the Urine is concern'd.

I Am going now to give you a long letter; as I intend to comprize therein, every thing that remains among the obſervations relative to diſorders wherein the urine is concern'd, made by Valſalva or by me. What follows is from Valſalva.

2. A knight of ſix and forty years of age, who had been formerly fat, but was now ſlender, and of a yellow complexion inclining to paleneſs; had begun to be troubled, eight years before, with many and various diſagreeable ſymptoms, on account of many and various errors in his diet, exerciſe, attention of mind, watching, and venery.

Firſt of all, being infected with the lues venerea, from lying with an infected woman, he was ſeiz'd with a gonorrhœa; which being cur'd by a proper medical regimen, was ſucceeded by another more violent one, from the ſame cauſe.

For beſides the pain in making water; an involuntary diſcharge of the urine, a purulent ſediment thereof, a pain of the ſtomach in like manner, and vomitings; by means of which he ſometimes threw up veal, that had been eaten five days before, without any change; were exceedingly troubleſome.

Being

Being freed from all theſe complaints by the help of remedies, he was attack'd a third time, with the ſame kind of gonorrhœa, and from the ſame cauſe; the diſorder being attended with ſpaſmodic pains in making water, and continual watchings. Beſides theſe ſymptoms, he had certain tumours of the condylomatous kind, within the extremity of the inteſtinum rectum; from which, for ſome weeks, and even for ſome months, blood was diſcharg'd every day, to the quantity of five or ſix ounces: ſo that the patient was already reduc'd to ſuch a ſtate of weakneſs, as to fall into ſwoonings whenever he attempted to walk.

To this flux of blood was join'd a diarrhœa; by which a yellow matter, and, ſometimes, a matter of a different colour, was diſcharg'd. This diarrhœa continu'd quite to the day of his death: being at one time more mild, and at another time more violent; as the purulent ſediment of his urine did alſo; and the frequent diſcharge of his urine attended with pain, which diſcharge was likewiſe almoſt always involuntary: but if the urine ſtagnated a little time in the bladder, by reaſon of the tenacious ſtate of the matter, it excited a moſt ſevere pain; eſpecially while the diſcharge thereof was attempted.

With all theſe different ſymptoms was he troubled for many years: his pulſe being always quick, frequent, and turgid; though the other ſigns, which confirm the preſence of a fever, were wanting. About fifteen days, only, before his death, having ſat up very late, and indulg'd himſelf in playing at dice; whereby he loſt a conſiderable ſum of money; he was ſo affected therefrom, both in body and mind, that he went to bed with a vomiting and a fever, which began with a ſlight ſhivering and a heavy pain in his head.

In the mean while, the ſediment of his urine was increas'd: and the pains in making water were increas'd: and theſe pains becoming ſtill more and more violent, excited a ſingultus. Yet even this was appeas'd after many days: puſtules, in the mean while, breaking out about the lips, and probably about the fauces alſo; as a pungent pain therein, a difficulty of ſwallowing, and a viſcid and tenacious ſpitting, ſeem'd to ſhow.

An itching, moreover, in the ſkin of the loins, which had been ſlight for about two years, exceedingly tormented the patient at times, for ſome weeks before his death. Finally, the ſingultus returning, and the ſtrength of the patient failing every day, he died convuls'd.

The thorax being open'd; in conſequence of his having had a difficulty in lying down on one ſide on the laſt day of his life; the lungs were found to be ſound: if you except ſome very ſmall ſtony concretions that ſcarcely deſerv'd notice.

But when the belly was open'd, the kidnies appear'd to be leſs than their natural ſize, of an unuſual kind of figure, and to have many protuberances here and there externally. Theſe tubercles, when cut into, ſhow'd a ſanious humour for which a paſſage was open'd into the pelvis. But in the urinary bladder; in which, particularly about its neck, the root of the diſeaſe was ſuppos'd to exiſt, by the unanimous conſent of many learned men; nothing appear'd in any part that was worthy of remark, except a kind of ſlight eroſion about the orifices of the ureters.

3. Valſalva

3. Valſalva ſuppos'd, and with very good reaſon, that this diſſection might be a leſſon of ſome importance; as it might make us cautious in determining the ſeats of diſeaſes, when they relate to the urinary parts: the diagnoſis of which, even when enquir'd into with the greateſt ſkill, and accuracy, is very frequently deceitful; as it was in this caſe, and in another alſo, whereof I remember him to have given me the relation in this manner.

4. That a certain perſon labour'd under a diſorder of his urine, and the parts ſerving to the ſecretion thereof; was evident to every body. Yet he complain'd very little of the kidnies, or of the region of theſe viſcera; but, on the other hand, was tormented with ſuch pains in the bladder, that five or ſix phyſicians, not of the meaneſt claſs, did not doubt but the ſeat of the diſeaſe was in the bladder.

When his body was diſſected after death, not the leaſt diſorder appear'd in the bladder; but there were large and ramifying calculi in the kidnies.

5. I ſaw theſe calculi, which Valſalva kept by him.

And both of theſe hiſtories brought to memory a third, which you will find transfer'd, from Harderus, into the ſection of the Sepulchretum, which relates to the ſubject in queſtion; that is into the twenty-fifth (*a*). The caſe is of a boy of three years old; but, although he diſcover'd, by his geſtures, the moſt violent pain in making water; he notwithſtanding did not ever ſhow any ſigns of pain in the kidnies that I read of.

I omit to take notice that this boy alſo, as well as that knight (*b*), had a perpetual diarrhœa; puſtules not long before death, and even convulſions in death: for ſome of theſe may be from different cauſes in different perſons. This circumſtance, however, I attend to, "that nothing preternatural "could be obſerv'd in the bladder:" but that in one of the kidnies there had been not only plenty of ſmall ſandy particles, included in the carunculæ papillares; and particularly, that before the mouth of the ureter, there had been "an oblong acuminated calculus, of the hardneſs of a flint, and tenaciouſly "wrap'd up in membranes;" or, as Harderus himſelf explains it in the ſcholium, "intangled in very thin membranes of the kidney;" which "he was "oblig'd to ſeparate with a lancet."

Whether, therefore, an irritation be propagated from the kidnies to the bladder, by the continued membranes of the ureter; as I have already ſaid on a former occaſion (*c*); which is the moſt ſenſible where it terminates; or rather, whether in theſe caſes, ſmall particles of ſand, or as the firſt hiſtory, by a ſlight eroſion about the orifices of the ureters, ſeems to ſhow, acrid particles of matter deſcend into the bladder; they ſo vellicate this viſcus by ſtagnating there, that the moſt ſevere pains ariſe: and particularly while it is conſtricted, in order to diſcharge its contents.

At leaſt a very acrid matter, flowing down from the corroded kidnies into the bladder, had ſo affected this reſervoir, and the neighbouring parts, in a certain man, that the pain in the loins not continuing conſtantly as it did in the bladder, and bringing on "all the ſymptoms of a calculus confin'd there-"in, there remain'd no doubt of the actual exiſtence of this calculus" in the

(*a*) Obſ. 10.
(*b*) Supra, n. 2.
(*c*) Epiſt. 40. n. 5.

breaſt of his phyſician, who was the celebrated Hottinger (*d*). Yet of ſuch a calculus was not the leaſt trace found after death.

And that you may the more and more underſtand, how eaſily we may fall into errors, in determining upon the cauſe of a dyſuria; turn to the hiſtories of two matrons: the one given by Schrockius (*e*), the other by Bonfiglius (*f*).

The firſt was tormented with a teneſmus, with pains in the pubes, and a kind of milky urine; the ſecond had been afflicted with a dyſuria from her very infancy, with urine ſometimes of the ſame kind; to which, at laſt; many ſmall foliated membranes, as it were, "were added:" which had not been diſcharg'd without the ſenſation of a very heavy weight, a pain, and an ardor.

Yet in neither of them was found any diſeaſe of the bladder; but in the ſecond, one of the kidnies was internally diſeas'd, and prolaps'd from its ſeat, in conſequence of its bulk being increas'd: and in the firſt was a large ſcirrhus, which, occupying almoſt the whole pelvis, and growing to the fundus of the bladder, ſo compreſs'd this reſervoir, that the acrimony of the urine, retain'd thereby, gave the moſt excruciating pain.

6. Valſalva very ſolicitouſly enquir'd after another cauſe, whereby the bladder may ſometimes be vellicated: but he could never confirm the exiſtence of it by diſſection; I mean of worms reſiding in this cavity. I know however, that worms, diſcharg'd together with the urine, as the patients and their domeſtics imagin'd, have been more than once offer'd to his inſpection.

For I was at Bologna, when a gentleman; who, after pains of the kidnies, and a ſucceeding ſenſe of pricking in the bladder, finding, at length, that his urethra was prick'd in the ſame manner, at the time of making water; ſaw a kind of ſlender animalcule fall from the urethra, together with his urine: and ſoon after, examining the urine he had diſcharg'd, he not only ſaw this one in the chamber-pot, but even many other animalcules of the ſame kind, together with ſandy concretions; which appearances he ſhow'd to Valſalva, who was his phyſician.

Valſalva had happen'd, at that time, to give the patient liquor in which the root of ſaxifrage had been boil'd: he therefore order'd them to be taken out of the urine, living as they were, and thrown into a glaſs of this decoction; from whence they loſt their vivacity, became ſtupid, and ſeem'd almoſt dead, yet, after two days, having ſhaken off this ſtupor, they were thrown into ſeveral different waters, for the ſake of experiment; in each of which waters, different ingredients, ſuppos'd to be inimical to worms, were boil'd, and agitated; but none of theſe waters was obſerv'd to affect them ſo much as the former, except one, in which not only ſuch things as are ſuppos'd to expel ſand, and gravel, had been boil'd, but even quick-ſilver had been agitated.

Theſe animalcules were black; and, in ſome meaſure, ſimilar to thoſe worms that we ſee in dry wood: which circumſtance, at length, put Valſalva upon inquiring whether others of the ſame kind could not be found in the patient's bed-chamber, or where the chamber-pot was at any time kept.

(*d*) Eph. n. c. Dec. 3. A. 9. & 10. obſ. 232.

(*e*) Earund. cent. 1. & 2. obſ. 186.

(*f*) Earund. cent. 9. obſ. 4.

And theſe animalcules being actually found, there was an end to all his experiments: yet he did not ſeem entirely to have laid down his former ſuſpicion; eſpecially as other animalcules were brought to him, which were ſaid to have been diſcharg'd in the urine of another patient, together with a fabulous matter.

One of theſe Valſalva ſhow'd to me; and took care that it ſhould be drawn to the life, even by the help of a microſcope: yet I ſhall ſay nothing upon the ſubject; ſince Alghiſi, in his letter to Valliſneri (*g*), has told us what appear'd to him from hence: and has, at the ſame time, given a figure of the animalcules: and Valliſneri has ſuppos'd he might ſuſpect from hence, that they were the off-ſpring of thoſe black flies, or worms, which make their niduſſes in timber; and that they had happen'd to fall from the cielings into the chamber-pot: for thus he wrote to me on the fourth day of April in the year 1711.

But the ſame Valliſneri ſeems, ſince that, in an annotation (*h*) to the letter of Alghiſi, to be almoſt inclin'd to believe, or, at leaſt, ſuſpect, that ſome very ſmall, and almoſt, inviſible worms; which he at that time ſaw in the urine of a man, who was his patient; might have been generated within his body.

This therefore being, at preſent, the ſtate of the queſtion; ſince Valliſneri did not, as far as I know, determine any thing, afterwards, for certain, in regard to theſe worms; it is proper that we alſo ſhould withold our aſſent in the mean while; either till chance preſents us with more certain appearances, or the ſkilfulneſs of ſome gentleman, extremely well vers'd in the hiſtory of inſects, ſuch as the celebrated Reaumur is at this time, ſhall make deeper reſearches into the ſubject.

For as the ſtudy of natural hiſtory, and that of inſects in particular, is carried to ſuch a height of improvement in our age, phyſicians have been thereby render'd the more cautious in giving credit to obſervations of this kind. See, for inſtance, the great number of hiſtories which are related by Johannes Rhodius (*i*), and Dominicus de Marinis (*k*).

Out of ſo great a number of worms, which were formerly ſaid to be diſcharg'd by the urethra, we ſhould, at this time, immediately know that ſome were nothing elſe but polypous concretions in the ſhape of worms; that others were real worms indeed, yet had not fallen from the urethra, but, externally, from ſome other place, into the chamber pots; inaſmuch as they were of that kind which cannot be generated within the body, nor live therein: or if they did really come from the urethra, it would appear that they were not generated in the urinary parts, but in the inteſtines which had been perforated; from whence they had crept into the bladder, or urethra: the paſſages being open'd by abſceſſes, and by fiſtulas in particular.

An example of this laſt kind is pointed out by Valliſneri (*l*): and Alghiſi (*m*) relates another of his own, that he was afterwards better acquainted with,

(*g*) Quam vid. tom. 1. hujus Operum, p. 5.
(*h*) Ibid.
(*i*) Cent. 3. Obſ. Med. 35 & 36.
(*k*) Diſſert. de remonſtr. a Capuce. & cæt.
(*l*) Adnot cit.
(*m*) Loc. cit.

from diſſection; which confirm'd him in his opinion of the caſe (*n*). You have, alſo, in the Sepulchretum (*o*), more than one example of perforations of this kind: and if, in theſe patients, round worms, or aſcarides, came forth by the urethra; there was nothing therein which could greatly excite our wonder.

But when, in this twenty-fifth ſection (*p*), you read of the diſſection of a man, who had, while living, diſcharg'd two aſcarides in his urine; and that, in his bladder which was ulcerated, one worm was found, "like thoſe that "are found in putrid fleſh;" you muſt heſitate, and doubt whether there was not ſome ſinus, which had been unobſerv'd, going from that ulcer, and reaching to the inteſtinum rectum: and whether the aſcarides had not paſs'd over, from thence into the bladder; or rather whether thoſe aſcarides; altho' they had been found by the patient, himſelf, "in a living and active ſtate, and creeping upon the glans penis, itſelf;" had nevertheleſs not come from the urethra, but from the anus, together with ſome part of the excrementitious matter; and by this means had crept on to the penis.

But in regard to that worm which was quite of another ſpecies, and which was found in an ulcer of the bladder; if however it was a real worm; and taking this for granted, if not carried thither by ſponges, or ſome other accident; you may ſuppoſe that it was brought forth by its mother-fly, near the external orifice of the urethra, which was infected with a putrid ichor: and that it had crept through this canal quite into the bladder: but that this had happen'd after the patient's death, and not while he was yet living.

For neither would the ſphincter of the bladder, unleſs quite relax'd, have ſuffer'd any thing to have acceſs to the cavity thereof; nor would the man have fail'd to feel the motion of this inſect creeping through the urethra; unleſs quite deſtitute of ſenſation; and in conſequence thereof would have had a ſtimulus to make water: and by this means, the animalcule muſt have been thrown out, together with the urine, immediately, as ſoon as ever it had enter'd the urethra: and I am ſurpriz'd that Ruyſch did not ſufficiently attend to this (*q*), when he ſuppos'd that worms might creep, from their lurking-places, through the urethra, quite to the neck of the bladder, and remain there till they put on the form of *nymphæ*; on which ſuppoſition another very great difficulty, in the opinion of Valliſneri (*r*), offers itſelf to our conſideration.

7. What then? you will ſay, among all the many examples that Georgius Francus (*s*), Roſinus Lentilius (*t*), Mich. Fr. Lochnerus (*u*), have reckon'd up, do not ſome, at leaſt, occur, that are plac'd beyond all poſſibility of doubt?

I am not at leiſure to examine them all. But this I can ſay; that many of them are of the ſame kind with thoſe ſpoken of before: and as they were all read over by Valliſneri; for thoſe volumes, wherein theſe enumerations are contain'd, were publiſh'd many years before his death, and perus'd by him;

(*n*) Vid. Benevoli Obſerv. 8.
(*o*) Sect. 27. l. 3. obſ. 1.
(*p*) In Additam. obſ. 20.
(*q*) Theſ. Anat. 1. in fine.
(*r*) Adnot. cit.
(*s*) Eph. n. c. dec. 3. a. 4. obſ. 2.
(*t*) Earund. cent. 1 & 2. Append. n. 11. ad obſ. 14.
(*u*) Earund. cent. 8. obſ. 99.

he, nevertheleſs, found no inſtance whatever, among them, as far as I know, from which he thought it neceſſary to change his opinion entirely.

He did not call into queſtion the credit of the authors who had written; but, in ſome he wiſh'd for a greater ſhare of ſagacity, in ſome more diligence, and in others a prudent method of ſuſpecting and doubting; ſo that, unleſs they had conſider'd all the ſymptoms which had preceded, all which attended, and ſucceeded, they ſhould not ſuppoſe themſelves to have made a ſufficient enquiry. After his death other examples came forth; one of which it appears had been communicated to him.

But he certainly could not have read thoſe that are extant in the Commercium Litterarium (*x*). And if he could have read them; he, indeed, without doubt, would have paid great deference to the illuſtrious and every way reſpectable obſervers, as I myſelf do; he would, nevertheleſs, probably have wiſh'd, that almoſt all of them, in general, had not happen'd in that ſex which is ſo prone to deceive; a circumſtance that is taken notice of by one of the obſervers; and, in like manner, that the worms had been deſcrib'd in ſome; in ſome that they had been really ſeen alive; and in others that both the deſcription, and the repreſentation, had not naturally given us a ſuſpicion of polypous concretions.

For you know how ſuſpicious he was in making his own obſervations; and, if you pleaſe, even difficult. However, in judging of the obſervations of others, he has had Daniel le Clerc (*y*), for a follower of his moroſe cautiouſneſs; and even Lochner (*z*) himſelf, and his friend Godfrey Thomaſius (*a*). But theſe authors, you will ſay, except to ſome only, of the many obſervations, wherein worms are ſaid to have been diſcharg'd from the urethra. Nor do I obſtinately deny them all. I only wait for ſome perſon to confirm, by his more clear, and leſs exceptionable examples, ſome obſervations on which I have leſs heſitation.

But if theſe obſervations ſeem, to you, to be plac'd beyond all doubt, you are at liberty to admit them for me; ſo you do but confeſs, that theſe appearances, which were then ſo frequent, and almoſt innumerable, according to this ſuppoſition, are now reduc'd to a few, and happen but ſeldom. And this will appear ſo much the more ſtriking, if we conſider thoſe which have hitherto been examin'd by diſſection. What was more ſimilar to a worm, than that which the celebrated Kneller (*b*) has deſcrib'd, as being thrown out of the urethra, after very violent pains of the urinary paſſages? But when a more accurate examination was made, he himſelf found that what he had taken for a worm, was nothing elſe but coagulated blood, ſurrounded with a kind of ſlender coat.

And even thoſe which were diſcharg'd in a very great number, by a man of diſtinction, through the ſame paſſage, "were fully and perfectly like" the round worms of the inteſtines; as the accurate deſcription of Thomaſius (*c*) ſhows: ſo that "the rumour, of ſo unuſual a thing, was ſpread abroad

(*x*) A. 1731. Spec. 27. n. 5; & a. 1734. hebd. 39. poſt. n. 4; & a. 1735. hebd. 36. n. 3. & a. 1743. hebd. 49. n. 3. ut omittatur a. 1745. hebd. 4. n. 2. & cæt.

(*y*) Hiſt. lat. Lumbric. c. 13. ubi. de Vermib. cum Urina Excret.

(*z*) Obſ. 99. cit.

(*a*) Obſ. 100. ſeq.

(*b*) Act. n. c. tom. 5. obſ. 75.

(*c*) Obſ. cit. 100.

" through the city, quick almoſt as thought." The nidus of which worms, being inquir'd after in the dead body, in the other parts deſtin'd to the offices of excreting the urine; it was at length found, from the ſtate of the left kidney, and its ureter, that they had been nothing more than inanimate concretions of fæculent and viſcid blood, collected together in theſe paſſages, and diſpos'd into that form.

And when true worms had been diſcharg'd from the bladder, Alghiſi learn'd from diſſections; as I have ſaid above (*d*); and another author refer'd to by Valliſneri, that is the celebrated Reinholdus Wagner (*e*), learn'd alſo by diſſection; through what paſſages they had come thither from the inteſtines.

But now let us, at length, go on from a doubtful, or at leaſt, very rare cauſe of a dyſuria; I mean worms generated in the urinary organs; to a manifeſt and very frequent cauſe; that is to a ſtone of the bladder: although out of two diſſections which I find, and no more, in the papers of Vallalva, of thoſe that were affected with this diſeaſe; as I have given one of them already, in conſequence of its having a more immediate relation to the apoplexy (*f*); one only remains, which relates to calculi of the bladder, and to their unſucceſsful exciſion at the ſame time.

8. A boy, of nine years of age, had already labour'd for ſix years, under a calculus of the bladder. He was much troubled with it at intervals. He frequently diſcharg'd his urine involuntarily, and mix'd with certain filaments; yet that fluid was of a natural colour: unleſs when it ſometimes became bloody from too great motion. The calculus ſometimes could be felt by the finger, when introduc'd per anum, and at other times could not.

And a lithotomiſt having undertaken to extract this calculus; after having troubled the boy for a long time, drew forth a ſmall ſtone with great force. And when he perceiv'd that another ſtone was contain'd in the bladder, he again tortur'd the boy to ſuch a violent degree, that he ſaid his pain was ſo excruciating as to ſuffocate him: at length he extracted a portion of the fractur'd ſtone.

Scarcely half an hour was elaps'd, when the boy began to vomit; complaining continually of a very great pain in the lower part of his belly. To theſe ſymptoms was added a ſlight tumour of the abdomen: and a fever attended by a great thirſt; together with ſome difficulty of breathing, and a toſſing of the whole body. He therefore died one and twenty hours after the extraction of the calculi.

His belly being open'd, the bladder, with its ſurrounding membranes, was found to be inflam'd; and about the cervix, on the anterior part, lacerated. In the cavity of it remain'd one half of the ſecond calculus.

9. The unſkilfulneſs, or raſhneſs, of the lithotomiſt, in this caſe, certainly cannot be excus'd. Nor do I ſay this, becauſe, when his finger was introduc'd into the anus, he ſometimes could, and ſometimes could not, perceive the calculi: for, in regard to this circumſtance, we ſhall conſider it preſently (*g*).

(*d*) N. 6.
(*e*) Eph. n. c. cent. 1 & 2. obſ. 170.
(*f*) Epiſt. 4. n. 2.
(*g*) N. 10.

But

But I ſay it for this reaſon, that it is certain he muſt not have made a ſufficient opening for extracting the calculus; as he extracted a ſmall ſtone with a very great force: for which reaſon the very circumſtance Celſus (*b*) has warn'd us of, happen'd with very ill conſequences; I mean that "the "calculus, when taken away with force, makes a paſſage for itſelf, if a paſ- "ſage be not already made:" and thus; although, in children, the parts more eaſily yield to dilatation, which is one of the reaſons why lithotomy is, for the moſt part, more ſucceſsful in this age, than any other; in this caſe the bladder was, nevertheleſs, lacerated about its cervix.

Add to this the tedioufneſs, and great painfulneſs, of the operation; and the breaking aſunder of one of the ſtones; though we do not read of its being large; which probably would have have been by no means neceſſary, if the paſſage had been made ſufficiently wide; and which ought always to be avoided if there be no neceſſity: leſt either the forceps ſhould hurt the internal coat of the bladder, by intercepting it, or the parts of the ſtone, by flying aſunder, ſhould injure this thin membrane: or leſt, while they are ſought after by a long examination, and drawn forth, they give occaſion of injuring the parts: or finally leſt any fragment of them, being left behind, ſhould afford a new beginning to a calculus of the bladder.

If Hippocrates had forbid ſuch a lithotomiſt as this, and others like him, from "cutting perſons who labour under the ſtone;" this paſſage of his from the little book intitled *Juſſurandum*, or the oath, would not have been ſo tortur'd.

But he forbad his diſciples this, and commanded that "they ſhould give "place to men who were employ'd in ſurgery in the performance of this "operation;" could he mean becauſe he thought that the practice of ſurgery did not become a phyſician? As if he himſelf were not very much vers'd in the practice of it; or was it for fear he ſhould expoſe his diſciples to the ſlander, and contempt, of thoſe who were only exercis'd in the cure of diſorders of particular parts?

I ſhould ſuppoſe ſo if, beſides this one diſeaſe, he had likewiſe order'd the ſame thing to be done in other diſorders of ſome certain parts. Why then did he except this one caſe only? I am rather inclin'd to be of opinion with thoſe who ſuppoſe it to be excepted, as being liable to the moſt conſiderable danger among the others; and particularly at that time, when ſo many admonitions, precepts, and inſtruments, whereby the operation might be brought very near to its perfection, as it is in our days, had not yet been added. But let us return to the lithotomiſt of whom I had begun to ſpeak.

10. As to his ſometimes feeling, and ſometimes not feeling, the calculi by introducing his finger into the anus, the cauſe of this circumſtance may be manifold: nor does this happen leſs frequently to ſkilful, than to unſkilful examiners.

The celebrated Jo. Anthony Galli certainly was, and is, a very ſkillful phyſician and ſurgeon; in which laſt capacity he was particularly famous: ſome years ago, this gentleman had been ſent for from Bologna to Faenza, at the ſame time that I was alſo ſent for from Forli, where I then happen'd to

(*b*) De Medic. l. 7. c. 26. f. 2.

be, to ſee a man of ſome eminence, who was affected with moſt of thoſe ſymptoms that generally attend a ſtone of the bladder.

This experienc'd ſurgeon, by introducing his finger at that time, could by no means perceive the ſtone, which he had perceiv'd before; yet we did not conclude that there was no ſtone, for this reaſon, as the ſymptoms ſtill continued. And we did not even conclude ſo afterwards, when they ſeem'd to have vaniſh'd.

For I was inform'd by the patient; about a month after that day, when the gout, (to which he had formerly been ſubject, and after that had not been any more troubled with, for a long time) had return'd upon him ſuddenly, and all the diſagreeable ſymptoms of his bladder had gone away at the ſame time; that he therefore did not doubt but I ſhould come over to his opinion as he wiſh'd: I mean that all the ſymptoms of which he had complain'd to ſo great a degree, when I was preſent, had not been owing to a calculus, but to a gouty matter irritating the bladder.

I anſwer'd him, however, ſtill in this manner; that as I had not pronounc'd, from the ſymptoms whereof he complain'd before, that he certainly labour'd under a calculus, becauſe he had not been willing to admit of the catheter; from whence, perhaps, an undoubted ſign of its exiſtence, would have offer'd itſelf in the ſounding of the ſtone againſt the catheter; ſo neither could I, from the obſcurity of thoſe ſymptoms; which perhaps was owing to the urine being become leſs acrid, by reaſon of the irritating particles being then carried to ſome other part; for a certainty deny that there was a ſtone: not even if the catheter were introduc'd, and no ſound could be perceiv'd.

For I was not ignorant that ſome lithotomiſts, while I ſtood by them, and even that Cheſſelden himſelf (*i*) as well as others, have not been able to perceive the ſtone; even after three times introducing the catheter: notwithſtanding one was really in the bladder.

And in fact, when I had return'd to Padua, it was ſignified to me, in the name of the patient, that as he was not able any longer to endure the former ſymptoms, which were now return'd; he had taken care to have the calculus, which was perceiv'd with the catheter, ſucceſsfully extracted by inciſion.

And indeed that very experienc'd man Morand (*k*) has hinted, that pains of the bladder, from a calculus, ſometimes lie dormant for many months together; and even for years: and you have in the preceding ſections of the Sepulchretum, from Tulpius (*l*), and Naſius (*m*), examples of thoſe perſons; one of whom, "for the ſpace of five years together," and the other "from "childhood, quite to the age of five and thirty," had little, or nothing, of theſe very troubleſome ſymptoms, of a ſtone in the bladder remaining: notwithſtanding they had been before afflicted therewith, and had, even then, large calculi in their bladders; ſo that the firſt of them, like our Faventinus, believ'd that he never had a calculus.

I take no notice of others, who, never having made any complaint of this diſeaſe, had, after dying in a decrepit old age, either large calculi, or a great number of them, in the bladder; to the aſtoniſhment of every one: to whoſe

(*i*) Vid. Morand. Mem. de l'Acad. R. des Sc. A. 1740.
(*k*) Ibid.
(*l*) Sect. 24. obſ. 8.
(*m*) Sect. 23. obſ. 7. §. 4.

three

three hiſtories, that are in like manner deſcrib'd in the Sepulchretum (*n*), I might add others; and in particular two from Alghiſi (*o*); one of which, by reaſon of the perforation in the middle of the ſtone, is ſimilar to the third of the former hiſtories, which has Loſſius for its author.

And in the year 1752, when I was teaching anatomy in the college, a perforated ſtone was brought to me, in the preſence of many perſons, by an eminent apothecary, whoſe ſhop is under the college; which ſtone was ſimilar to that repreſented by Alghiſi (*p*), except that the foramen was ſomewhat more narrow. He told us that it had been diſcharg'd, ſome days before, without any other aſſiſtance than that of nature, and the hand of the woman herſelf, in whoſe bladder it had been form'd.

And I ſuppos'd that this calculus, and every other of the ſame kind, if there have been any beſide that of Alghiſi, had been form'd in the ſhape of a ring, in the lower part of the bladder, about the orifice of the urethra; where the upper part of the proſtate, or, in the female ſex, the corpus glandoſum, as it is call'd, is ſometimes ſo prominent on the inſide of the bladder all round, that the neighbouring parietes of this receptacle ſubſide thereabout. Which prominence, and ſubſiding; though in the moſt healthy bodies, as I have ſaid in a former work (*q*), they are generally found to be inconſiderable, or ſcarcely obſervable; may nevertheleſs, at other times, be ſomewhat larger in different bodies,

The fabulous and viſcid particles, therefore, remaining behind after the laſt drops of urine, may ſometimes, in thoſe who abound therewith, concrete by degrees in this ſubſiding part; and receive an annular form therefrom, as if caſt in a mould; be there increas'd, and ſtagnate; till an unuſual ſituation, or motion, of body, or ſome other cauſe, may diſlodge it from thence, and raiſe it up: and ſo by accident puſh it into the urethra, which in women is generally pretty wide and dilatable, as happen'd to this woman; and that with ſo much the more eaſe, as the circumference of the ſtone approach'd, in ſome meaſure, to an elliptical figure; one extremity of which was a little narrower than the other.

The patient, by whom this ſtone had been voided, was a virgin of eighty two years of age: and ſhe had never been admoniſh'd by any pain, or troubleſome ſenſation, that ſhe labour'd under a calculus of the bladder; except that ſhe had remark'd her urine to have been diſcharg'd in a more ſlender, or thread-like ſtream, than uſual; till the calculus, having fallen into the urethra, excited pains of a ſudden, and theſe brought on efforts of expulſion: ſo that within half an hour's time it was already prominent, and could be laid hold of with the fingers and taken out: no inconvenience whatever, as the patient herſelf, who had related all theſe circumſtances, affirm'd, being left behind.

Yet the foramen, although it tranſmits the urine, does not always prevent the uneaſy ſymptoms; as it certainly did not prevent them, in the caſe of a light and round ſtone; and one of the ſame weight with that of Loſſius; in a merchant whoſe hiſtory (which is altogether worthy of being transfer'd into

(*n*) Ibid. §. 5. & 7. & ſect. 24. obſ. 9.
(*o*) Litotom. c. 4.
(*p*) Tab. 3. fig. 9.
(*q*) Adverſ. 3. Animad. 41.

the

the Sepulchretum) Charles Patin (*r*) took care ſhould be publiſh'd, almoſt at the ſame time, both at Padua, and Noremberg.

And leſt you ſhould ſuppoſe this to have happen'd, becauſe the canal was not hollow'd out in the middle, but through the anterior part of the ſtone; firſt turn to the account of that very great ſtone, in the *Acta Eruditorum Lipſienſia* (*s*), from which, "beſides a certain heavy pain in the inguinal region, "the old man, though eighty years of age, had ſcarcely perceiv'd any diſ-"order; as the urine, which was carried to the bladder, flow'd through a "canal, form'd on the ſurface of the ſtone, from the ureters immediately to "the cervix of the bladder."

And, on the other hand, ſee in the acts of the Cæſarean Academy (*t*), what another patient ſuffer'd; notwithſtanding on the ſurface of the calculus, which ſtuck in the neck of the bladder, "certain ſinuſſes were hollow'd out," that "the urine had kept open, like natural paſſages," through which to diſcharge itſelf.

And indeed, that you may not aſcribe ſo great an efficacy to the paſſage left through the middle of the calculi; read, in Contulus (*u*), the diſſection of the Cardinal Franzoſi, who, by a very regular method of living, was preſerv'd almoſt for the ſpace of thirty years, ſo as to reach his eighty-ſixth year: but "many times was he troubled with calculous, and urinary diſorders;" although the calculi of the bladder "repreſented a circle, when combin'd "together:" that is left a chink in the midſt of them, as the figure ſhows, "through which the urine paſs'd down."

Then, finally, attend to what I heard from Valliſneri. There was a gentleman at Padua, of the noble family of Mantua, an intimate acquaintance of Valliſneri's, who had been troubled with moſt of the ſymptoms, of the diſeaſe I am ſpeaking of, to ſuch a degree, and for ſo long a time; that if, beſides theſe ſymptoms, any impediment to the diſcharge of the urine had at any time come on, every phyſician would have agreed in their opinion of his caſe; and pronounc'd that he was afflicted with a ſtone of the bladder.

But many were of a different opinion, for this reaſon, that he always diſcharg'd his urine without any difficulty, even when in a ſtanding poſture. His bladder being examin'd after death; as he had order'd when living; in it were found three ſmooth calculi, of a roundiſh figure; and for this very reaſon, leaving a triangular foramen between their ſides, when plac'd near to each other: wherefore, although the urine paſs'd through the middle, and the calculi were of ſuch a figure, and ſuch a ſmoothneſs, as I ſee made uſe of to account for other patients not being troubled with diſagreeable ſymptoms of a calculus; yet in this gentleman, certainly, they were the cauſe of many and very conſiderable inconveniencies; as they were alſo to the merchant of Patinus.

But theſe caſes which I have refer'd to ſince thoſe two firſt of Tulpius, and Naſius, I have mention'd only for the ſake of compariſon: becauſe, whether they were, or were not, attended with any uneaſineſs to the patient, in almoſt

(*r*) Vid. in Lyceo Patav. ejus Vitam. & Eph. n. c. dec. 2. a. i. obſ. 19.
(*s*) A. 1685. Tab. 5.
(*t*) Tom. 4. obſ. 49.
(*u*) De Lapid. c. 23. & in calce libri.

all

all of theſe the calculi could be perceiv'd nevertheleſs, upon the introduction of the catheter; but not in the two firſt: as they were not obvious, but hidden in a diverticulum of the bladder, which was form'd upon the ſides of it: of the origin of which diverticulum I ſhall have a better opportunity of ſpeaking below (x).

But it is ſufficient to have hinted at it here; that you may, even from hence, underſtand what deceptions may ariſe to patients themſelves, and to lithotomiſts; if the calculi, which were before in the bladder, happen to recede into a ſacculus of that kind, from whence they may, according to the various poſition, and motion, of the patient, return back again into the bladder.

For it will happen, not only that out of many lithotomiſts, one may perceive the ſtone, and another may not; but that the ſame lithotomiſt may perceive it at one time, and not at another: and the patient, who before complain'd of a teneſmus, from the weight of the ſtone forcing againſt the rectum that lies beneath it, like a quantity of harden'd excrement; and who felt, at the time when the bladder conſtricted itſelf, in order to diſcharge the urine, great pains from the roughneſs of the ſtone irritating the bladder; and from thence, likewiſe, a troubleſome obſtruction, which oppos'd itſelf to the courſe of the urine; will, when the ſtone has been diverted into a lateral ſacculus of the bladder, ſeem now to himſelf to be quite free from all theſe ſymptoms and every thing elſe of the kind: and even quite releas'd from the diſeaſe.

But of calculi more hereafter. For if I am to go on from hence, to ſubjoin my obſervations, in the ſame order that I have related thoſe of Valſalva; I muſt, of courſe, begin with that which relates to the dyſuria, when brought on by a diſorder of the kidnies in particular: of which kind is that I promis'd you in the latter part of the former letter (y).

11. A man of ſixty years of age, had lain for ſome months, in this hoſpital, on account of a ſerous infarction of the thigh, and left knee: nor did he return home after this tumour was diſcuſs'd; being detain'd, at firſt, with a dyſentery, and after this with a ſlight inflammation of one eye: and finally, when this reaſon, for his ſtay, was remov'd alſo, he nevertheleſs ſtill remain'd on account of his indigence; which was ſo much the greater becauſe he was a great eater, ſo as not to be content with the food given to perſons on their recovery, but to be perpetually aſking for more.

This man was therefore carried off, in the hoſpital, as he was eating, by a very ſudden death; there being not the leaſt ſign of any ſyncope, or ſuffocation. Nor had he in his long ſtay in the hoſpital, ever given the leaſt ſign of the thorax, or brain, being never ſo ſlightly affected: and all I heard when I inquir'd from the perſons who had been about him, was that he had been ſometimes heard to complain of a ſharpneſs of urine.

And as I found the origin of this acrimony ſo much the more evident in the body after death, than I did the cauſe of that ſudden death which was obſcure; I for that reaſon thought proper to relate, in this place, rather than in any other, what appearances preſented themſelves to me, about the ſixth day

(x) N. 30. (y) N. 19.

after death: for it was not in my power to make any obſervation on them ſooner, for reaſons that there is no neceſſity of hinting at here: yet the body was ſo well preſerv'd, by means of the cold, (for it was now the middle of December in the year 1749) that although the inteſtines and meſentery were taken out, the day before I went to examine the body, they not only ſhow'd no diſorder at all, but even did not ſmell ſtrongly. What other appearances I met with, take as they follow; beginning firſt with the head.

The left hemiſphere of the brain, not only had many of the trunks of thoſe veſſels, which creep through the dura mater, turgid with blood, but alſo ſhow'd, in the ventricle that lay beneath it, a water ſomewhat turbid; not in any great quantity indeed, but in much greater quantity than in the right: in both ventricles, the plexus choroides were pale. And although the medullary ſubſtance of the cerebrum was ſomewhat hard, yet the cerebellum was very lax.

In the thorax, the poſterior ſurface of the left lobe of the lungs coher'd cloſely with the pleura: and the edges, both of this, and the right lobe, ſhow'd their veſicles to be diſtended with air, to a conſiderable extent. However, neither the aſpera arteria, nor the larynx (which were alſo examin'd internally) had any mark of diſorder: nor yet the great veſſels, nor the heart itſelf; in which was nothing polypous. Within the pericardium was a turbid water; but in no great quantity: and in both the cavities of the thorax, as in the belly alſo, was ſo ſmall a quantity, that it did not exceed, in all, more than a few ounces.

Finally, the belly when open'd; if you except ſome of the genital parts, particularly the urinary paſſages, and a few of the arteries; ſhow'd all its contain'd viſcera to be nearly in a natural condition: nearly, I ſay, for the liver, and the ſtomach, which was half-full of ingeſta, partly ſolid and partly fluid, appear'd ſomewhat larger than they generally do.

But the trunk of the great artery, where it lay on the vertebræ of the loins, had, in ſome places, white beginnings of oſſification, which the ramifications of it alſo had: and indeed it had true bone already form'd; as I found in that part, in particular, where the right iliac divided itſelf into two branches.

As to what relates to the genital parts, the right teſticle was three times larger than the left. But this was perhaps natural; for both of them, when cut into, were found to be ſound. This appearance, however, was from diſeaſe; I mean that from the tunica albuginea of both of them, and from the ſame part in both, hung a ſomewhat round and very ſmall body; which, although the coat itſelf was white, was of a rediſh colour; the remains, I ſuppoſe, of a foregoing hydatid: yet there was no water within the tunica vaginalis.

At length the internal ſtructure of both kidnies appear'd to be confus'd: nor were ſmall cells wanting, full of fluid, one of which; for the others lay hid ſomewhat more internally; ſhow'd itſelf partly on the ſurface. Each pelvis, after it had deſcended from the kidney, in a preternatural ſtate of diſtention; ſo as to be equal, in width, to two inches; contracted itſelf into the ureter. And the ureters, when they had run almoſt half their length, became wider than they generally are; and particularly the left, which was alſo increas'd in its length, by reaſon of its flexures.

In both of them, you would ſuppoſe, if you handled them externally, that calculi were contain'd in ſome places, though only here and there. But when we came to open them, we found, in every one of theſe places, an hydatid; ſome of them round, others oval; hanging from the internal coat into the cavity of the ureter, and yet not by a ſmall ſtalk. The round ones were equal in ſize to ſmall grapes; and the oval ones were twice as large as they longitudinally.

The ureters conſiſted of pretty thick coats, the internal of which was ting'd with a continual redneſs: and they open'd by more oblong orifices than was natural, into the bladder. This reſervoir contain'd ſo great a quantity of urine, that in the ſupine poſture of the body, it extended itſelf to the loweſt vertebræ of the loins. And indeed when, after the urine was ſqueez'd out, it was diſtended with air blown in; although it came near to that ſhape which was mention'd, by me, in a former work (z); it was nevertheleſs conſiderably longer than it generally is: however, the coats thereof were not thicken'd, nor were internally red in any part; with which colour not even the urethra was ting'd.

Finally, that which I promis'd in the preceding letter (a), ought not to be omitted. From the poſterior border of that orifice, from whence the urethra begins, two white, hard, hemiſpherical, prominences, ſmall in their ſize, but of equal magnitude, and contiguous to each other, protuberated within the bladder; in cutting which longitudinally, together with the proſtate gland, I found them to be continu'd thereto, and to be made up of the ſame ſubſtance: and although one part of the proſtate gland was not of that whiteneſs and hardneſs; yet the remaining ſubſtance thereof, and eſpecially that which roſe up on the ſides of the ſeminal caruncle, was perfectly like that of the double prominence, into which it was produc'd; ſo that if theſe prominences were ſcirrhous, the largeſt part of the proſtate might ſeem to be no leſs ſcirrhous alſo.

12. The other appearances that I demonſtrated in the brain, the heart, and the other viſcera of the ſame body, which were accurately diſſected, do not relate to the preſent ſubject, nor are proper for the preſent occaſion; becauſe they were not preternatural.

And this being the ſtate of matters, I could not ſuppoſe the cauſe, of ſo ſudden a death, to have conſiſted in any thing elſe, but a certain very violent convulſion of the pia mater; and this in conſequence of the ſerum; which a long ſtagnation in the thigh had, perhaps, render'd very acrid; not being ſufficiently carried off by ſtool; and having, therefore, fallen, at laſt, upon the membranes of the brain, to the utter deſtruction of the patient.

But the complaints of the acrimony of the urine, had been of much longer ſtanding, in my opinion, than the infarction of the thigh: at leaſt the origin of them will, certainly, ſeem to be of a very ancient date, if you conſider the ſtate of the kidnies, ureters, and bladder.

Theſe parts had, in all probability, been formerly affected, univerſally, with calculi: that is to ſay, the kidnies, by their formation, and increaſe; the ureters, and bladder, by their various delay in theſe parts; which, by ſym-

(z) Epiſt. anat. 1. n. 61. (a) N. 19.

pathy, again injur'd the kidnies, the pelves, and the other parts juſt now mention'd: the greater part of them being enlarg'd, by the retention of urine; and the ureters, moreover, being injur'd in a peculiar manner; ſo as I do not remember to have ſeen them in any other ſubject; I mean by having internal hydatids brought on them, which, even of themſelves, might have retarded the urine, and, without any calculi, have been the cauſe of the greater part of thoſe ſymptoms which I juſt now accounted for from calculi: or, to ſay the leaſt, might have increas'd every ſymptom that the calculi gave origin to.

But whatever was the cauſe that brought on theſe diſeas'd appearances, it certainly is not ſurprizing, that an urine more acrid than uſual, ſhould have diſtill'd from kidnies of this kind: or that, from the glands of ureters of this kind; inſtead of a humour fit to ſmear over and defend them againſt the ſaline particles of the urine; an acrid humour, or none at all, ſhould be ſecreted.

For, from either of thoſe cauſes, you may account for theſe paſſages being internally red, inſtead of having their natural whiteneſs; and ſending down to the bladder urine that either was become more acrid than uſual within themſelves, or was at leaſt untemper'd with that addition of an emollient and demulcent nature.

And what I have touch'd upon but ſlightly here, you will the more approve of, if you read thoſe writings of our friends Pujati and Benevoli; and transfer hither what I have pointed out in the preceding letter *(b)*. For I muſt now go on, in purſuance of the order I profeſs'd to obſerve, to that dyſuria which is from calculi of the bladder.

13. Andrew Cortini; a fellow-citizen of mine, father of the very reverend inquiſitor of that name at Ferrara, and the grandfather of Anthony Cortini, who is very expert in the chirurgical and pharmaceutical art, and one for whom I have a great regard; being of a fattiſh habit of body, and but little us'd to exerciſe, began, after he had advanc'd beyond ſixty years of age, to make water of a white colour, and of a viſcid nature.

From hence aroſe a ſuſpicion that he had a calculus in his bladder; which ſuſpicion the ſurgeon, by introducing the catheter, confirm'd himſelf in, but not the patient: for when the ſurgeon ſaid he touch'd the calculus with the catheter, he, on the other hand, being deceiv'd by the impulſe of the calculus, aſſerted that it was not a calculus he touch'd, but the bladder. And this opinion he was the more confirm'd in, becauſe, from the time of introducing the catheter, he had found it much eaſier to diſcharge his urine.

Now therefore he did not complain of this ſo much, as of a certain pain in the ſcrobiculus cordis, which, if he walk'd a little more quick than uſual, oblig'd him to ſtop. To this was added turgid and vibrating pulſations of the arteries; ſuch as frequently happen from an aneuriſm. Nor indeed did theſe ceaſe, when, after a long interval of time, the difficulty of making water return'd, with a ſenſe of heat about the pubes. And indeed the complaints of that pain in the ſcrobiculus cordis, were almoſt continual: the pulſe continu'd the ſame.

4

(b) N. 12.

Three

Three or four years had paſs'd from the firſt beginning of the dyſuria; and from the beginning of the other diſagreeable ſymptoms, at leaſt two and twenty months, when I was alſo call'd to the patient, before the end of February, in the year 1711, to comfort him, as I immediately ſaid to his domeſtics, rather than to cure him.

He made a much greater quantity of water than he drank: and his urine was of a yellowiſh colour, inclining to white; like the whey wherewith a portion of milk ſtill remains mix'd; a white matter afterwards ſubſiding; ſometimes in ſmall quantity and thin, at other times in large quantity and thick; and of an ill ſmell: and this was diſcharg'd with a greater degree of pain and difficulty; as was wont to happen, chiefly, about the morning.

The pain in the ſcrobiculus cordis was become ſo very violent, that the patient ſaid, when it attack'd him the moſt ſeverely, as it did at intervals, that it ſeem'd to him juſt as if he were torn by dogs: at which time he alſo ſaid that the ſternum, and the neighbouring parts, on both ſides, were painful; but that the upper limb, on the left ſide, became ſtupid, and without ſenſation: and finally, that the heart, eſpecially if he lay on the left ſide, palpitated to a very troubleſome degree.

Theſe ſymptoms became more violent every day, ſo that the face was no longer red, in thoſe exacerbations of pain, as it before us'd to be in general; and even the noſe, hands, and feet, were cold: and the inteſtines, which it had been hitherto neceſſary to relax every third day, by means of a clyſter, now diſcharg'd a bilious matter after each of theſe exacerbations.

But, leſt any one ſhould ſuſpect that theſe aroſe from an irritation of the bladder; in proportion as theſe were more heighten'd and ſevere, ſo much the more ſlight was every ſymptom about the bladder; and the urine was diſcharg'd with the more eaſe. Yet you did not, on applying your hand to the breaſt, or the belly, perceive any thing that was preternatural: and even the belly had no where any hardneſs, nor the leaſt tenſion whatever.

In the mean while, his ſleep being broken with his pains, his appetite for food being deprav'd, and a thirſt troubling him, his ſtrength was more and more worn out: the internal ſenſes began to be torpid as it were; and the pulſe itſelf had ſo declin'd from that firſt magnitude, and impetus, as to become ſmall and weak (eſpecially on the left ſide) and frequently unequal, and this alſo particularly on the left ſide: but in the laſt exacerbations there was no pulſe at all perceiv'd.

In this deplorable ſtate of things then, I did not omit to give all the eaſe in my power, though I could do nothing by way of radically curing the diſorders. But all the remedies I could try, though they had no bad effects, had no good ones nevertheleſs. On the eighth of March therefore, two or three drops of blood having fallen from his noſtrils ſpontaneouſly; and he having ſpent the following night worſe than ever, from the frequent attacks of pain in the ſcrobiculus cordis; and having, nevertheleſs, rais'd himſelf to ſit up in bed in the morning, when the pain was gone off; the ſame pain return'd about an hour after: and raging very violently carried off the unhappy patient, I had almoſt ſaid, ſuddenly.

The thorax of this body, which was, even then, furniſh'd with a pretty large quantity of fat, being firſt diſſected; we found the lungs, the heart, and

and the large veſſels, to be quite free from diſorder. The belly contain'd a liver which was not of a natural colour: the gall-bladder was contracted and flaccid; in conſequence of the pains, of which I have ſpoken, having ſo many times preſs'd out the bile. The fundus of the ſtomach, which was in other reſpects ſound, ſhow'd a ſlight appearance of blackneſs.

The left kidney; being almoſt univerſally conſum'd in its internal ſubſtance, and extremely flaccid; contain'd an unequal calculus, and urine like that which the patient had diſcharg'd. This kind of urine was alſo found in the right kidney: the external ſurface of which was divided into a great number of riſing globules, as it were, of an unequal magnitude among themſelves.

The bladder contain'd three ſtones, which were neither rough nor large. The internal ſurface of this cavity ſeem'd to be made up of a kind of *tomentum*, or tow, and grew out at the ſide of the cervix, into a hard tubercle, not larger than a bean; and of the ſame colour with the bladder, both internally and externally. Finally, in the proſtate gland was a ſinus, wherein a matter ſimilar to tartar, and already almoſt calculous, was contain'd.

14. In this patient, the cauſes of the dyſuria, which is the ſubject of our preſent letter, were contain'd in the proſtate gland, the bladder, and the kidnies: but the cauſes of thoſe very violent pains, whereby he was tortur'd to ſuch a degree, and at length deſtroy'd, lay, as far as I can conceive of the caſe, in the kidnies. For it is not probable that theſe pains were excited from the lower parts of the belly; eſpecially as there were very great diſorders in the kidnies, with which no body can be ignorant to what a great degree the omach conſents, the right ſide of which anſwers to the ſcrobiculus cordis.

And to this conſent are we to impute the vomitings that are, generally, join'd with diſorders of the kidnies. You will therefore remember that, in a very obſcure caſe (*c*), I ſuſpected theſe diſorders to exiſt from the actual exiſtence of theſe vomitings.

There had alſo been very great vomitings, in a virgin, who was kill'd within the ſpace of two days, by an excruciating pain under the left ribs; owing to an occult diſorder of the kidney, as I have deſcrib'd in the thirty-ſixth letter (*d*). Yet it has ſometimes happen'd, that conſiderable diſorders of the kidnies have lain hid (*e*), without any vomiting, and without any, or, at leaſt, with very ſlight marks, of the kidnies being diſeas'd; or that they have impos'd upon phyſicians, for diſorders of the bladder, which was entirely unaffected (*f*).

Finally, it is certain, that with diſorders of the kidnies, a pain of the ſtomach is ſometimes join'd; but not one that is mortal, or disjoin'd from a pain of the loins; which every one knows to attend, in general, upon diſorders of the kidnies, that are affix'd thereto: and theſe either not ſevere, or ſometimes violent, as I have related in another letter (*g*) from Ruyſch, when he ſaw the ſurface of the kidnies divided into globules, juſt as I obſerv'd it to be in the right kidney of this patient.

However, in this caſe of ours there was no complaint of the loins; no very ſevere pain in the bladder; no excruciating tortures of the hypochondria;

(*c*) Epiſt. 30. n. 22.
(*d*) N. 20.
(*e*) Epiſt. 40. n. 15.
(*f*) Vid. ſupra, n. 4 & 5.
(*g*) Epiſt. 40. n. 19.

no vomitings; but intolerable pains at the ſcrobiculus cordis, were the only ſigns of the kidnies being affected with diſeaſe.

You will perhaps aſk, whether this circumſtance has been obſerv'd by other authors: it certainly ſo much the more deſerves to be notic'd, as it may the more cauſe a ſuſpicion of other diſeaſes; eſpecially if, as in the hiſtory propos'd, it follow after large and vibrating pulſes; and bring on the troubleſome palpitation of the heart, a ſtupor, and torpor, of the upper limbs, and at length death itſelf: and that even almoſt ſuddenly, when the patient ſeems to be ſomewhat refreſh'd.

For I have already admoniſh'd (*b*), that this is to be fear'd, when violent internal convulſions recur at intervals. To which kind of diſorder, I ſuppoſe the exacerbations of pain I have deſcrib'd to belong: and I account for them from the very great irritation of the nerves in the kidnies; ſo that being propagated by means of the other nerves communicating therewith, to thoſe parts which I juſt now mention'd, it produces, in each of theſe parts, the effects I have ſpoken of.

This ſingular circumſtance attended our caſe, that the ſtomach, which is, as I have already taken notice, generally attack'd by exacerbations, proceeding from the kidnies, was not, as uſually happens, excited to vomiting; notwithſtanding that part of it, which anſwers to the ſcrobiculus cordis, was very ſeverely tortur'd.

15. A young man, who had paſs'd his twentieth year, had been tortur'd, for a long time, with ſuch pains of the bladder, eſpecially when he made water, that he could not diſcharge his urine without crying out. His urine was purulent. An emaciated ſtate of body, a fever, and other diſorders, which generally accompany a ſtone of the bladder, had come on; and by theſe he was, at length, carried off in this hoſpital, before the end of the year 1742.

The bladder, which was thicken'd in its coats, ulcerated, and, in part, ſcirrhous, actually contain'd a ſtone which was ſomewhat rough on the outſide, and three inches in length; being two inches and a half broad, in the broadeſt part of it: it was alſo nearly of an oval figure, and depreſs'd on both ſides; and in ſome places a great quantity of tough and bloody mucus adher'd round about it. The kidnies, and the ureters, were full of pus, and urine; and the ureters were even diſtended to ſuch a degree, as to equal the diameter of the inteſtinum ileum.

16. The mucus, which we ſaw adhering to the calculus of this young man, is ſometimes gather'd around it in ſo great a quantity, that the ſtone cannot be diſtinguiſh'd, even by introducing the catheter; a circumſtance which happens to the moſt experienc'd men; and which, as Marcellus Donatus teſtifies (*i*), happen'd to Falloppius himſelf.

By this mucus, when gather'd round the calculus, betwixt that and the bladder; though it does not tend to remove the other ſymptoms, and even increaſes ſome; the pains, nevertheleſs, which are created by the roughneſs of the calculi, are diminiſh'd: and particularly if the mucus is very thick, and in great quantity.

(*b*) Epiſt. 10. n. 13. (*i*) De Med. Hiſt. Mirab. l. 4. c. 30.

Hence

Hence it is that the pains are increas'd by diuretic medicines (which I ſaid alſo of nephritic caſes) as our Sanctorius confirm'd by a very clear example, that is transfer'd into the Sepulchretum, in the preceding twenty-third ſection (*k*); where you will alſo read that of Donatus (*l*).

Wherefore, in opinions which I have read, Valſalva preſcrib'd, in caſes of ſtone in the bladder, demulcents, emollients and anodynes; and applied them in the form of fomentations, ſteams, and ſmall glyſters; and to women even in peſſaries and injections: but as he, in conjunction with Albertini, diſapprov'd of narcotics; becauſe they did not act with any advantage, in very ſmall doſes, againſt pains of this kind, and very large doſes were dangerous: ſo alſo they diſapprov'd of the drinking of bath-waters, or any other waters in large quantity; which has been propos'd by others; fearing leſt the mucus we have ſpoken of ſhould be waſh'd away. On which ſubjects I remember to have heard them both ſpeak, many times, to the ſame purpoſe; but particularly when the maſter of the horſe drank the water of Nocera, in pretty large quantity, every morning.

That this gentleman had an ulcer in his bladder, no body doubted, and Valſalva ſtill leſs than others; as he did not believe it was always neceſſary that blood ſhould have appear'd in the urine, in order to induce him to pronounce that there was an ulcer in the urinary paſſages. One thing however was a matter of controverſy; I mean whether, beſides an ulcer, there was a calculus in the bladder. This was affirm'd by ſome, on account of the pain which had already been long perceiv'd in the end of making water.

But Valſalva and Albertini withheld their aſſent; well knowing that an ulcerated bladder could not, more than an ulcerated hand, be contracted, and conſtring'd, without pain: and this they knew to be the reaſon why the bladder, when thus ulcerated, like other hollow parts, which are under a neceſſity of being dilated at one time, and contracted at another, are with great difficulty brought back to a ſound ſtate.

Yet they did not contend that no calculus was in the bladder; although the patient, either in dancing, or riding in a coach, experienc'd no ſymptoms of it; nor yet, while he diſcharg'd his urine, perceiv'd a very ſevere pain at the end; but ſuch a one as he again began to perceive, when he had at length diſcharg'd as much as he had drunk.

However, although they neither affirm'd, nor denied one or the other, yet Albertini ſeem'd to me, in ſome meaſure, inclin'd to believe that there was no calculus; ſince, by ſo plentiful a drinking of water, the mucus muſt have been taken away from the ſtone, and the troubleſome ſymptoms, conſequently, daily increas'd by this means: and, on the other hand, he conceiv'd that while the water was paſſing, the ulcer and pains might be mollified, and aſſwag'd thereby; and that theſe pains did not return to their former ſeverity, before the urine began to recover its former acrimony, after the diſcharge of all the water.

But leſt you ſhould think this heſitation in affirming, or denying, the exiſtence of a ſtone in the bladder, was too cautious in ſuch men as theſe; or thoſe of equal eminence with themſelves; I beg of you to read what has been

(*k*) Obſ. 4. §. 11. (*l*) Ibid. §. 4.

excel-

excellently well collected, and conſider'd, by Helwich (*m*), among others, of the very great difficulty of properly determining ſuch a queſtion: the more you ſhall be diſpleas'd by the head-long raſhneſs of ſome others, the more will you commend the prudent cautiouſneſs of theſe gentlemen.

17. That I do not here add other diſſections, of thoſe perſons in whom a ſtone has been form'd in the bladder, without any external cauſe, will not be ſurprizing to you; as you know, that the greateſt part of my life has been ſpent in this country, that is, like ſome others; among which thoſe of Schafhauſen (*n*), and Gottingen (*o*), are commended; very little liable to that diſorder: and this circumſtance ſome think is owing to the wines, ſome to the waters, and others to both of them.

Certainly, the wines in this place are not tartareous, to ſpeak in the language of phyſicians: that is to ſay, they do not cover over the caſks, internally, with ſtony cruſts; as I have ſeen in ſome other places where they make white wines: ſo that a caſk of ſtone ſeem'd to have been form'd within the wooden caſk.

But the wines that we make uſe of here are red: which wines Brunnerus (*p*), indeed, thought "affected the head, and the upper parts, more than "the white;" yet, on the other hand, his father-in-law, Wepfer (*q*), whoſe opinion is commended by Hoffmann (*r*), aſcrib'd it chiefly to the ſalutary effects of their red wine, that calculous diſorders were very rare among his fellow-inhabitants of Schafhauſen.

And that red wines are produc'd, in ſome places, which not only preſerve from the ſtone, but even diſſolve it when begun; inaſmuch as they even diſſolve the tartar, wherewith other wines have incruſted the caſk, into which they are put; you will learn from the Commercium Litterarium (*s*).

Moreover, in regard to the waters; the water of the rivers in this country; with an equal part, or ſomewhat more, and even ſometimes a much larger quantity, of which the muſt (from whence the wines generally us'd in this country are made) is preſerv'd; contains, perhaps, leſs earth, as is generally ſaid; or at leaſt leſs of the matter fit for the generation of calculi.

And I ſpeak thus generally, becauſe it is neceſſary to attend to a great number of different circumſtances, and make many minute examinations, before any thing certain be pronounc'd of every one river in particular: although, for the moſt part, leſs earth is found to be contain'd in river-water, than in well-water; from whence it happens that we ſee the former fit for many domeſtic purpoſes, for which the others are not, or at leaſt not equally; as, for inſtance, that of diſſolving ſoap, and boiling beans or peas: and as to the queſtion of wholeſomeneſs, who can doubt but that the water of rivers, and fountains; which the will of almighty God has caus'd to offer themſelves ſpontaneouſly to us for drink; are, in general, more ſalubrious than thoſe waters, which neceſſity has oblig'd men, who live at a diſtance from rivers, and ſprings, to procure for themſelves, by digging deep pits in the earth?

(*m*) Act. n. c. tom. 2. obſ. 60.
(*n*) Vid. Eph. n c. dec. 1. a. 2. obſ. 39.
(*o*) Vid. Haller. Opuſc. Pathol. obſ. 33.
(*p*) Eph. cit. cent. 9. obſ. 3. in not.
(*q*) Obſ. 39. paulo ante cit.
(*r*) Med. Rat. tom. 4. p. 2. ſ. 2. c. 11. §. 20.
(*s*) A. 1735. hebd. 6. n. 3. & hebd. 17. n. 4. & præfat. in not. ad pag. 43. & 132.

And if the opinion of the moſt learned men is alſo to be attended to, ſee what Mead (*t*), and Platner (*u*), think of well-waters: if you ſuffer yourſelf to be perſuaded by their judgment, which is certainly ſupported by many different reaſons, you will not heſitate greatly to prefer river-waters to thoſe of wells; ſpeaking of them in general.

But if the queſtion be of particular waters; there certainly are rivers to which you would prefer a very good well; and ſtill more another river. For you know, that the waters of certain fountains, from whence rivers, at length, have their origin, are thoſe that incruſt their canals, ſome with very thick and hard earthy laminæ, and others with thin and ſofter laminæ.

And theſe few things I have hinted at here, that you may refute the vulgar error of thoſe who imagine that all calculi are owing to the cuſtom of drinking wine, or ſuch like liquors: as if there were not, even in water, a matter of that kind; and they who had never drunk wine never generated calculi. At leaſt he who is ſpoken of in the preceding twenty-third ſection of the Sepulchretum (*x*), "had made uſe of water-drinking only, through the whole "courſe of his life; yet his "bladder contain'd two and thirty ſtones."

But why do we inquire after examples of this fact in human creatures; ſince many of the like kind are to be met with in animals who never drink wine. For to omit the more ſpecious examples; either on account of their weight; as that ſtone, for inſtance, which weigh'd almoſt two pounds, and which being taken from the bladder of a man, Lemery brought to the Royal Academy of Sciences at Paris (*y*); or on account of their colour; as ſeven or eight very ſmall ones which Valſalva formerly ſhow'd me, and which were taken from the bladder of a cow, having the form of pills, and being of a ſurface that was rough with very ſmall granules, and of a braſs colour; ſo that any who did not know them to be light, would have taken them for metallic bodies, as he would have done for golden ones, thoſe greater numbers of calculi, that were ting'd, both internally and externally, with a golden colour, and all of them ſmall, which others (*z*), in like manner, found in the bladders of oxen; to omit thoſe therefore, and thoſe found in a ſow (*a*), and others, and to take notice of them only in dogs; and, in the firſt place, thoſe ſeen by me in a bitch, that I diſſected when I was a very young man, for the ſake of exerciſing myſelf in anatomy; I not only found calculi in both kidnies, but I alſo found that the right kidney did not retain even a third part of its ſubſtance: whereas there was a purulent matter among the calculi.

And in another bitch, of a conſiderable age, that I formerly open'd at Padua, for the ſake of experiment, I found a calculus, within one of the kidnies, of an irregular and depreſs'd figure; hard in its ſubſtance, and not ſmall in its ſize. And to return to the bladder; the third bitch (for it accidentally happen'd that theſe five creatures, the calculi of each of which I have mention'd in particular, were all of the female ſex) had two ſtones in its gan-

(*t*) Expoſ. Mechan. Venen. tent. 6. in fin.
(*u*) Progr. quo aquam font. ſalubrior. & cæt.
(*x*) Obſ. 4. §. 2.
(*y*) Hiſt. a. 1700. obſ. anat. 14.
(*z*) Act. n. c. tom. 8. obſ. 2. & Sachs Gammarolog. c. 14. §. 8. vid. & apud Haller. ad Boerh. Meth. Stud. Med. p. 13. c. 2. ad an. 1665. n. 101.
(*a*) Sachs c. cit. 14. §. 6. & eph. n. c. cent. 7. obſ. 7.

grenous.

grenous bladder; a larger and a ſmaller; both of them of an oval figure, but very much depreſs'd on both ſides: and even one ſurface of the leſſer was ſomewhat excavated ſo as to receive the larger.

This bitch was eleven years of age, and had, for a long time, diſcharg'd a very ill-ſmelling urine; yet without howlings, I ſuppoſe on account of the ſmooth ſurface of the calculi, which, for that reaſon, did not prick the bladder at leaſt; till, at length, ſhe was carried off by convulſive motions, wherewith ſhe had been ſeiz'd. This relation I receiv'd from the maſter of the dog (who was one of the philoſophers of this ſacred college) at the ſame time that he ſhow'd me the recent calculi.

And calculi have been met with in ſo great a number of dogs, by others, that unleſs I ſelect thoſe only, which, either their number, their ſtructure, weight, or ſituation, make more worthy of being notic'd; I ſhall not ſoon come to a concluſion. In a dog, which had long labour'd under a dripping of urine (*b*), "ſome thouſands" of ſmall calculi were found "in the diſ-"tended bladder." The bladder of another (*c*) contain'd one, which, by reaſon of a leſſer that was included within it, reſembled an *ætites*, and was a pound and a half in weight.

But the bladder of a third (*d*); which often diſcharg'd its urine with pain, and a vehement howling; contain'd a calculus of a rough ſurface; and not ſmooth as in the bitch I open'd at Padua; and although it was ſomewhat leſs in weight than three ounces, yet you will wonder more at this than at that which weigh'd a pound and half: for this dog was very ſmall in its ſpecies.

Finally, to deſcribe the ſituation, rather than the calculus; that ought not to be paſs'd by, which a worthy young gentleman, who was a pupil of mine, told me, ſome years ago, he had found in a dog which he diſſected for the ſake of exerciſing himſelf in anatomy. The ureters, a little above the place where they open into the bladder, both of them join'd together into one canal; which was not wider than either of them when ſeparate: this one canal, which is a very extraordinary inſtance, perforated the bladder in the middle of it, and at the lower part; and thus ſerv'd inſtead of the two ureters, which uſually carry the urine into this cavity.

At the beginning, then, of this canal; where the ureters, as I have already ſaid, join'd together; he found a calculus ſticking, which was not very hard. Yet all theſe examples, and much more the other inſtances which Donatus (*e*) has collected; of calculi found in the liver alſo, or the gall-bladder, as well as in the ſtomach, and inteſtines, of brute animals; are not to be objected, in the manner Donatus has done, to Ariſtotle; when he ſays (*f*) "that "no animal but man can become calculous;" for he has immediately explain'd this, in ſuch a manner as to ſhow plainly, that he meant to ſpeak there only of calculi in the urinary bladder.

And in another paſſage (*g*), which it is ſurprizing ſhould eſcape Donatus, he has expreſly ſaid, that, in victims, "the kidnies" were ſeen "very fre-

(*b*) Earund. dec. 3. a. 5 & 6. obſ. 260.
(*c*) Ibid. in append. ſub n. 6. ad obſ. 23.
(*d*) Dec. ead. a. 9 & 10. obſ. 170.
(*e*) C. cit. ſupra ad n. 16.
(*f*) Sect. 10. probl. 42.
(*g*) De Partib. Animal. l. 3. c. 4.

" quently to be fill'd with calculi, with lacerated membranes and tubercles, " and even the liver and other parts.

18. And from what Ariſtotle has ſaid in another place (*h*); " that not on- " ly a humour deſcends into the bladder, but ſome dry concretions alſo, from " which calculi may be form'd;" we underſtand the moſt ancient origin of the opinon of thoſe, who aſſerted that the beginnings of all calculi, of the bladder, come from the kidnies; and that in theſe calculi, for that reaſon, a peculiar nucleus is always found in the center.

And although I do not deny but both of theſe circumſtances are true in many perſons, yet I ſhall ſometimes be more ready to join with the opinion of Hippocrates (*i*), who has taught us that this happens from the urine being very long confin'd; whereby that which is the moſt thin part of it, is diſcharg'd: " but that which is moſt thick, and turbid, is heap'd up together, " and concretes; and at firſt, indeed, is ſmall, but afterwards becomes " larger: for while it is roll'd about by the urine, whatever is thick and " compacted together, adapts itſelf thereto, and by this means increaſes it, " and forms one general concretion."

And that this may happen very ſoon, appears from the obſervation of Joannes Dolæus (*k*), who aſſerts that a white mucilaginous matter, diſcharg'd from the bladder of a certain knight, " had been ſuddenly harden'd " into a yellowiſh calculus; from being expos'd to the external air."

But that the urine, by ſtagnating within, may become putrid, even without the contact of the external air, appears from the experiments of the celebrated Brendelius (*l*); who deduces, from the putrefaction thereof, the origin of calculi: as he ſees (*m*) that it produces both hard cruſts, and a mucous pultaceous matter, diſtinguiſh'd with hardiſh granules; which itſelf alſo grows hard ſoon after.

And that there are urines which depoſit theſe particles ſooner, and more readily, he does not at all doubt (*n*), where he mentions the caſes of two infants; one but juſt two days old, and the other about eight; who not only diſcharg'd calculi before death, but had calculi found within them when dead.

And what kind of calculous matter Mead ſaw (*o*), in the carcaſe of a boy of five years old, and by what degrees he obſerv'd it degenerate into a ſtony hardneſs, you may learn from himſelf: as you may alſo, from the celebrated Haller (*p*), what he ſuppoſes to be the firſt beginnings of calculi in the kidnies.

But whether the incipient calculus, or the matter of the calculus, deſcend from the kidnies into the bladder, or be generated in the bladder itſelf; there is no doubt but the calculus has its increaſe from the ſame matter: nor do they ſeem to advance any thing contradictory to truth, who ſay that the particles of this matter will be more firmly adapted to each other, in proportion as the increaſe is more ſlow; and leſs firmly, in proportion as the increaſe is more ſpeedy: and they ſeem to be nearly in the right, who

(*h*) Hiſt. Animal. l. 3. c. 15.
(*i*) De Aere, Aquis &c. n. 22. 23.
(*k*) Eph. n. c. dec. 3. a. 4. obſ. 64.
(*l*) Progr. de calculi veſicæ & cæt. Natalib. n. 2.
(*m*) N. 1.
(*n*) N. 2.
(*o*) De Imp. Sol. & Lun. c. 2.
(*p*) Opuſ. Pathol. obſ. 34.

ſuppoſe

ſuppoſe that this increaſe will be greater in ſummer, than in winter; as in ſummer the calculous matter is much leſs diluted by the watry matter, which then goes off, through the ſkin, in a very conſiderable portion: and this ſeems to me another reaſon why, if it is in our power to chooſe, the exciſion of the calculus ſhould be put off from autumn to ſpring, rather than from ſpring to autumn.

Yet beſides the beginning of the calculus, form'd either in the kidnies, or in the bladder, the ſame matter adheres round about other things alſo, that are introduc'd into the bladder from without. But as many examples of this kind have been written and collected by many authors, I ſhall inſiſt chiefly on thoſe which I myſelf, or my friends have ſeen; and yet ſhall not deſcribe them all nevertheleſs.

19. For the firſt that offer'd itſelf to me, is that which was publiſh'd three and forty years ago, in the *Ephemerides Cæſareæ N. C. Academicæ* (*q*). And indeed, beſides that of mine, another deſcription is alſo extant of the very ſame caſe; by one who did not know that mine was publiſh'd: this ſecond deſcription was publiſh'd ſixteen years after, in a certain annotation join'd to the works of the celebrated Valliſneri (*r*); who had been preſent, together with me, while the ſurgeon perform'd the diſſection.

Both the deſcriptions, indeed, agree pretty well together in the principal matters: and if they differ a little in ſome things, conſider that I certainly committed my obſervations to writing on the very day of the diſſection, as my cuſtom is. And the calculus, which I ſtill preſerve by me; together with the needle about which it had been accreted; is certainly not "very hard:" and this the magnitude of it, compar'd with the weight, at firſt ſight teſtifies.

For although it conſiſts of two parts, each of which approaches to the oval figure; and the larger part, within which the point of the needle; and almoſt a third part of it, as it is natural to ſuppoſe; lies hid, is three inches long, two broad, and one and a half thick: and the leſſer part, which fill'd the urethra, in the ſame manner as you will read in the caſe of another virgin (*s*), is continued to one extremity of the former part of the calculus, in ſuch a manner, as to ſhoot out at the ſide of it, and form a right angle therewith, and equal the third joint of the middle finger in magnitude; yet both of them, together with the needle, are below the weight of a phillipic ſilver coin.

And that the ſubſtance of the calculus is, in great meaſure, friable (or at leaſt, externally) and its texture ſpongy, is confirm'd even by looking at it. For certain thin lamellæ have fallen off, in ſome places, ſpontaneouſly, and have laid open the ſmall caverns that lie beneath: and a pulveriz'd matter, of a white colour like the calculus, ſimilar to that which falls from rotten willow or withy branches, naturally moulders from the ſtone.

And this I was willing to add to the deſcription at preſent, as a circumſtance that I could not obſerve in the recent calculus; and indeed not till it had lain by ſome time.

This calculus is, therefore, furniſh'd with ſuch *cortices*, or ſhells, as, if

(*q*) Cent. 5. obſ. 26.
(*r*) Tom. 3. p. 3. Oſſ. 12.
(*s*) Sepulchret. ſect. hac 25. obſ. 5.

there

there had been other harder ſtones in the bladder, at the ſame time, might eaſily have been broken by the daſhing of theſe againſt them; and being ſhatter'd into fragments come forth, with the urine, by the ſame paſſage: as happen'd in the old man, whoſe hiſtory is given in the Sepulchretum (*t*), from the obſervation of Tulpius.

Nor will you ſuppoſe the calculus to have been of a much harder nature, which that very experienc'd man Heiſter (*u*), having previouſly perceiv'd it by the help of the catheter, ſoon after, by means of ſome common remedies, that he ſubjoins, got rid of: for by the uſe of theſe medicines, a great quantity of matter, in the form of a calx, was diſcharg'd with the urine; and within three weeks, all the diſagreeable ſymptoms, wherewith he had been troubled for the ſpace of four years, were remov'd: and this caſe he gave the relation of, when it was now the third year after that ſucceſsful cure. And I could wiſh that all the calculi, which are form'd within the bladder, were of that kind.

But you ſee from the Sepulchretum itſelf, how many are ſaid to have been of a flinty hardneſs: you even ſee, in the ſame place (*x*), that a very large one is ſpoken of, from Heers, as being "harder than any flint;" and from Braſavolus (*y*) ten, that were found in Albertus Savonarola, which, if they were thrown upon the ground, rebounded like a ball: and finally, you will find in Linden (*z*), that one which can be exceeded by very few in point of weight, was ſeen by many perſons; that is to ſay, one which weigh'd thirty-two ounces, and was "very hard, compact, triangular, and of the colour of "a flint: and from hence, by means of ſteel, fire was drawn as from a flint."

And Panarolus, in like manner, ſpeaks of calculi (*a*), which were "ſo hard "as to reſemble the lapis pyrites; for when ſtricken with ſteel, they diſcharg'd fire:" but theſe I purpoſely omit to take notice of, leſt, as he ſays they were diſcharg'd by a woman, you ſhould ſuſpect that he was impos'd upon; ſince Bartholin (*b*) ſays that many had conjectur'd a noble patient, and his friends, who were preſent, to have been impos'd upon, even in lithotomy itſelf, by a crafty juggler; becauſe ſparks of fire were ſtruck out of the falſe ſtone; "and it is impoſſible that ſuch a ſtone ſhould be generated in "a man;" for which reaſon he could ſcarcely forbear doubting the hiſtory of another of like hardneſs, which had been given to him, as having been cut out of the human bladder.

But all thoſe that I have taken notice of, from the Sepulchretum, are ſaid to have been found in the bladder of bodies after death: and leſt you ſhould doubt whether there had been any cauſe of fraud, the firſt, at leaſt, was found in an old man, who had never complain'd of a calculus in the bladder; as another old man never had of his kidnies, who, nevertheleſs, had a ſtone in his right kidney, of an unuſual magnitude, and figure; and "in hardneſs "equal to any flint whatever:" as that celebrated man Chriſtoph. Guil. Bajerus (*c*), who was preſent at the diſſection, aſſerts.

(*t*) Sect. prox. 24. obſ. 10.
(*u*) Diſſert. de Medico nimis tim. n. 36.
(*x*) Sect. 23. obſ. 7. §. 5.
(*y*) Ibid. obſ. 2. §. 4.
(*z*) Ibid. obſ. 1. §. 1. & ſect. 24. obſ. 10. §. 3.
(*a*) Jatrologiſm. pent. 2. obſ. 34.
(*b*) Cent. 4. Epiſt. Medic. 100.
(*c*) Commerc. Litter. a. 1745. Hebd. 40. n. 2.

To

To me, however, it has never yet happen'd to have a calculus ſhown me, that could be compar'd with theſe; unleſs by the fraud of women, and the credulity of one or two phyſicians, who had been too eaſily deceiv'd by their artifices.

For here I firſt ſaw one, which not only; to uſe the words of Ferrandus (*d*); "ſhould be call'd a river-ſtone, rather than a calculus of the bladder;" but, though it was really a river-ſtone, was daub'd over with blood, and obtruded upon the incautious for a real calculus of the bladder.

And after that I had a letter ſent me from Venice, by a phyſician in other reſpects not unlearned; in which he told me of a certain woman, who diſcharg'd, almoſt every day, a great number of calculi, and thoſe not very ſmall neither: and, in order to gain credit from one who did not eaſily believe, with the letter he ſent a great number of the calculi; on the ſight of which I was immediately aſtoniſh'd, that there could be any one in the world, who did not know them to be large, and rough, fragments of the common flint, which is made uſe of to ſtrike fire: however, I wrote back nothing elſe, but that I deſir'd him to ſubject them to a chymical diſtillation, and the conſequence thereof would ſhow the nature of the ſtone; I therefore receiv'd no more letters from him.

Yet I do not ſay theſe things, as if others may not have ſeen, in other places, what I have not ſeen wherever I have been. And indeed I perſuaded one of my own countrymen, who denied that a calculus could have been generated in the human body; for this reaſon only, that it reſiſted the hammer; to attend to the other properties in like manner, and make a diligent inquiry; ſince we ſee that Steinius is quoted by learned men, as having deſcrib'd human calculi which reſiſted the ſtrokes of the hammer, in his Lithographia.

And we muſt, beyond a doubt, give credit to the very experienc'd Morand (*e*), when he aſſerts that the calculi, which he calls *murales*, take the ſame poliſh as marble: for which reaſon he thought them unconquerable, even by that lithontriptic remedy, which had been, not very long before, made public among the Engliſh; by means whereof it has been found that ſeveral other calculi have been either diminiſh'd, or conſum'd; and that by the teſtimony even of the catheter alſo in ſeven: at which Franciſcus Sylvius, and Boerhaave, would have been ſurpriz'd, had they been living, that this could be brought about by means of alcaline ſalts, and even could be brought about by no other; for one of them (*f*) had ſaid, that this might be effected "by rock ſalt, or the acid ſpirit of nitre:" and the other (*g*), that it could be "done by ſcarcely any other fluid than the ſpirit of nitre."

But I wiſh they could be aſtoniſh'd that the uſe of this Engliſh remedy had produc'd ſuch effects in every one, or at leaſt in the greater part, of the patients who had taken it: and, indeed, I wiſh that it had not been hurtful. But if you conſider thoſe great number of exceptions, which were afterwards added; among which are thoſe, alſo, that the celebrated Hazonius (*h*) has

(*d*) Sepulchr. ſect. cit. 23. obſ. 2. §. 5.
(*e*) Mem. de l'Acad. R. des Sc. a. 1740.
(*f*) Prax. Med. l. 1. c. 55. n. 50.
(*g*) Prælect. ad Inſtit §. 791.
(*h*) Queſt. de his Edita n. 4.

ſhown

ſhown us are to be taken from the nature of the calculus, from the age, and from the temperament, of the patient; it will appear pretty clearly, how often this remedy might be either uſeleſs or hurtful: and if you read the hiſtories and diſſections, which the Commercium Litterarium ſets forth (*i*); you will eaſily underſtand, how much damage ariſes from thence to the internal parts, and particularly to the urinary paſſages: and at the ſame time you will find that there was no eroſion of the calculus, or of the calculi, which would have appear'd from the ſediments in the urine.

But while I ſpeak this, do not ſuppoſe either that this eroſion, or deſquamation, of the calculi; if we conſider every kind of calculi, and every kind of lithontriptics in general; is always to be deſir'd. You may learn this, not to turn over other books, from the Commercium already quoted. And where (*k*) the examples, and the diſſections, of two calculous bodies are deſcrib'd, the calculus of the former, "which was widely and deeply eroded in ſeveral "parts," deſerves to be attended to; for ſome lithontriptic liquor being given, to which that effect was probably to be imputed, all the ſymptoms had been exacerbated: and the bladder, though not eroded indeed, had been inflam'd, round the orifice, to a conſiderable extent.

In another place (*l*), the caſe of an illuſtrious man is taken notice of by the celebrated Goetzius: wherein he ſays that the patient; having, by the means of ſome remedy or other, diſcharg'd in his urine "a very large quantity of ſmall ſandy particles, and ſcales, which ſeem'd to be the ſhell of the calculus broken down into pieces;" had his pains increas'd to ſuch a degree thereby, that he was carried of in conſequence of the exacerbation.

And in the body after death, was found a calculus, "depriv'd of its viſcous "and ſmooth ſurface (which had lain in contact with the ſides of the bladder "without any injury) and forc'd, with its very hard, rough, and unequal "ſurface, againſt the neck of the bladder;" ſo that this change, in the ſtone, ſeems to have excited the violence of the pains: eſpecially when we call to mind thoſe things that are ſaid above (*m*).

Yet this very phyſician has aſſerted, that a medicated water, "properly "prepar'd from the ſhells of oyſters, or other ſhell-fiſh," ſucceeds more happily than that Engliſh lithontriptic, which has been diſapprov'd by more than one very learned phyſician among the Engliſh, and particularly by Mead (*n*); for by the uſe of this water, he ſays, "ſmall pieces" of not very hard calculi, "ſometimes of ſand, and at other times of very ſmall "nuclei, as it were, are diſcharg'd together with the urine."

He commends the diſſertation of that celebrated author Robert Whytt, upon this water. And you will read of experiments made at Helmſtad, in another diſſertation which was publiſh'd in the ſame place, under the patronage of the celebrated Krugerus (*o*); by which experiments it appears, that this water is of an *alkalino-ſulphureous* nature.

(*i*) A. 1740. hebd. 41. n. 2. & a. 1745. hebd. 3. n. 2.
(*k*) A. 1733. hebd. 21.
(*l*) A. 1731. hebd. 23.
(*m*) N. 16.
(*n*) Monit. Med. c. 10. in fin.
(*o*) Diſſert. qua exhibentur Experim. cum aqua Oſtrocoderm. inſtituta.

There have been ſome alſo, who mix'd acids with the alcalies; and found, that into the fluid, while thus effervеſcing, if calculi were thrown, they were either entirely, or in ſome meaſure, diſſolv'd: for which reaſon they injected an effervеſcing fluid, of this kind, into the bladder of dogs; in order to make an experiment how far the bladder could bear it.

Yet although it was born by a ſound bladder, could it alſo be born by one which is irritated, and ulcerated by calculi? Certainly not; ſince it is found by the experiments of Morand (*p*), that, in an ulcerated bladder, the diſorder is increas'd by that former Engliſh remedy; although not in an effervеſcing ſtate, and diluted by the quantity of urine, wherewith it deſcends to the bladder.

But let us return to calculi which are form'd upon needles.

20. A country-girl, almoſt of the ſame age with that formerly ſpoken of, by me, in the Ephemerides (*q*); for ſhe died in her fourteenth year; having done the ſame thing as the former, ſixteen months before, deſervedly ſuffer'd the ſame misfortune. For having introduc'd a braſs hair-bodkin, notwithſtanding it was bent in the middle, very high into the urethra, ſhe perceiv'd that it was ſuddenly ſnatch'd out of her fingers, and entirely hid within the bladder.

Being reſtrain'd by ſhame, ſhe, not only then, but even almoſt quite to the time of her death, was ſilent as to the true cauſe of the pains, and uneaſineſſes, which ſhe felt, and particularly in making water; which were ſo many, and ſo great, that a tumour having, at length, ariſen in the hypogaſtrium, and the neareſt part of the ileum, a pus was diſcharg'd by two foramina that it had made for itſelf; one larger and one ſmaller; the former of which was in the left ilium, and the latter on the right ſide; in that part which is properly call'd, with Laurentius (*r*), the *fines hypogaſtrii*.

Being thus affected, ſhe was receiv'd into the hoſpital at Padua, a month or two before death. It was there eaſily obſerv'd, that, together with pus, urine was pour'd out through each of the foramina, but more through the left; under which was a cavity of a pretty conſiderable ſize, wherewith the right foramen, alſo, communicated.

As, in this cavity, the probe met with ſomething hard; I was aſk'd what I ſuppos'd this could be. I immediately call'd to mind what had reſiſted the probe, when it was introduc'd through the fiſtula, which had open'd itſelf in one of the ilia, and had diſcharg'd urine with the pus, in the former girl. And when I heard that this girl was alſo tortur'd with pains of the bladder, in making water, and that ſhe diſcharg'd only a ſmall quantity of urine, and that purulent; I anſwer'd that it was neceſſary to inquire, whether ſhe had introduc'd a needle, or any thing elſe of the like kind, into the urethra.

The girl denied it; till the left foramen being enlarg'd, by a ſlight ſection of the common integuments, the point of the bodkin, and the greater part of its length, were evidently ſeen, within the cavity, by every body. Then what ſhe could no longer hide, ſhe too late confeſs'd. For even the bodkin could not be extracted, by reaſon of a calculus that was form'd upon it; which calculus, though it was eaſy to perceive it by introducing the probe

(*p*) Mem. cit.
(*q*) Vid. ſupra ad initium n. 19.
(*r*) Hiſt. Anat. hum. Corp. l. 6. c. 2.

through the paſſage of the urethra, or through that cavity, yet it was impoſſible to move, even the moſt ſlightly, without great pains.

And the ſame calculus prevented their injecting any thing into the urethra, to aſſwage the pains, by blocking up the paſſage. To theſe ſymptoms were added a very great waſting of fleſh; the quantity of pus was increas'd every day; and the putrid ſmell, and the fever, became very violent.

Theſe ſymptoms were follow'd by a loathing of all food; a vomiting, and diſcharge by ſtool, of a yellow liquid matter; a dejection of ſtrength, and weakneſs of pulſe; till death at length put the wiſh'd-for end to ſo many miſeries and complaints: among which none had ever been heard of a pain in her loins, by thoſe who examin'd her upon that head.

The carcaſe, which ſeem'd to be a ſceleton cover'd with ſkin, was diſſected in the open air, and in a very large place, on account of the time of the year being very hot; for it was the beginning of July in the year 1738.

I, firſt of all, ordered the probe to be paſs'd through the right foramen into the cavity of the ulcer; and the whole ſinus to be laid open. This was betwixt the muſcles of the abdomen and the integuments; nor had any communication, in any part, but with that cavity.

The cavity was in length, and in breadth, three inches; extending itſelf from the left ilium towards the linea alba, having a thin poſterior paries, which the remains of the muſcles, and the peritonæum made up, and by which it was ſeparated from the cavity of the belly; but in the ſame paries, which was open on the right ſide, it communicated with the fundus of the bladder: and there a great part of the bodkin was prominent into the cavity of the bladder.

The abdomen was then cut into, in ſuch a manner, that the inciſion did not reach to the bladder: which, although the cavity was ſmall, had coaleſc'd pretty high, that is above the os pubis, with the internal ſurface of the abdomen, in that part only where it lay open into the cavity of the ulcer; ſo that nothing could be diſcharg'd into the general cavity of the abdomen, wherein there really was not the leaſt extravaſated fluid.

And even the lower border of the omentum, which had ſcarcely any remaining fat, in moſt places, was cloſely connected to the neighbouring peritonæum of the bladder.

Theſe appearances being ſeen, and the bones of the pubes being drawn aſunder, the whole bladder was diſclos'd to view; and itſelf, together with the urethra, which was ſound, laid open: the coats of theſe cavities were found to be thicken'd, but ſo contracted, that beſides the calculus they could ſcarcely contain any thing.

The internal coats of theſe parts, which were unequal, and ulcerated, in many places, adher'd to the ſtone here and there: and were, like the cavity of the ulcer, in many places gangrenous alſo.

The calculus was a little more than two inches long, being ſomewhat thicker than a man's thumb, and, in its ſhape, reſembling an egg, the vertex of which, was turn'd upwards; as the point of the needle was alſo; with all that part which went to the angle whereof I ſpoke in the beginning; being almoſt parallel to the calculus, and disjoin'd from it by the interval of an inch: the remaining part of the needle was, alſo, on the outſide of the calculus, as far as could be conjectur'd, almoſt univerſally; the head only,

with ſome of the neighbouring portion of it, being very firmly infix'd to the middle and left ſide of the calculus; that is, cover'd over with the calculous concretion; which portion is, on that ſurface, and at both of its extremities, very unequal; on the oppoſite ſurface almoſt ſmooth and ſomewhat white; except where it was ting'd of a yellowiſh colour, as the whole left part is; which circumſtances I deſcribe as I now ſee them; for at that time it was bloody in ſome places, and in others of a dirty brown colour.

At that time alſo, the calculus being examin'd, as it is connected with the needle, by medical weights, was found to be a few grains lighter than ſeven drams; but now it is a few grains heavier than five drams and two ſcruples.

Moſt of the other parts of the belly were in a preternatural ſtate: their appearances were as follows. Some of the inteſtines were a little livid, and ſomewhat turgid with that yellow humour which was laſt of all diſcharg'd: the liver was whitiſh: the ſpleen was pretty livid, and a little larger than it generally is.

But the ureters, and the kidnies themſelves, were in a very bad condition indeed: for theſe canals were dilated, and full of pus; of the ſame kind with that which was found in the cavity of the ulcer in conſiderable quantity; for it was very liquid, and of a yellowiſh colour, inclining to white: or, in other words, it was a pus mix'd with urine.

And the kidnies were preternaturally inlarg'd, eſpecially the right; which was alſo very hard, and internally hollow'd into ſmall cells, that were in great number, and ſo diſtended with the ſame kind of pus, as the pelvis was alſo, that it ruſh'd out, to a conſiderable height, upon diſſection. The adipoſe and proper coats of the left kidney; being join'd to each other, thicken'd, and indurated; confin'd the ſame kind of pus betwixt themſelves, with which the ſurface of the kidney, that was eroded in ſome places, overflow'd; as the internal parts did alſo in ſeveral places.

But the very filthy odour, which exhal'd from the kidnies, and the bladder, forbad us going on to open the thorax; no mark of diſeaſe in that part having appear'd.

21. The diſſection being thus finiſh'd, you will readily conceive, from what I ſhall here ſubjoin, ſomewhat more at large, what I then immediately ſaid, according to my cuſtom, to the many men of eminence, and others both medical and chirurgical practitioners, and ſtudents, who heard me.

What reaſon could induce this girl, and ſo many others, to thruſt the heads of needles, or bodkins, into the urethra, is not ſo much to be inquir'd after in the lacunæ of the ſalacious humour; inaſmuch as they open in other parts, and even on the outſide of the urethra, unleſs you, perhaps, ſuppoſe that thoſe canals alſo, which I deſcrib'd (*s*) within the urethra of women, belong to this claſs alſo; as in the exquiſite ſenſe of the membrane wherewith it is internally inveſted.

For unleſs they applied the friction very high up in the urethra, it could not happen, that, by a ſudden and ſtrong contraction of the lower part of the bladder, the needle ſhould be ſnatch'd out of their fingers, and be quite buried in that cavity; eſpecially when the needle is pretty long.

(*s*) Adverſ. i. n. 10. &. iv. Animad. 24.

For from the bladder, and its ſphincter, I account for this misfortune, agreeably to the opinion of Molinetti (*t*); and not from a certain power of the uterus, as they ſay, which, even if it had this power of drawing towards itſelf, would not, however, draw what was thus acted upon, into the bladder.

In ſome caſes the needles have fallen out, of themſelves, after having been taken in; as happen'd to two girls that are ſpoken of by Valliſneri (*u*): to one when ſhe was aſleep, and to the other when ſhe was making water: I ſuppoſe, becauſe in theſe they had only enter'd the bladder in part; that is to ſay, the crooked needle eaſily remaining with one part in the urethra, while the other was retain'd within the bladder for a month.

On this part, however, no calculous matter had been form'd; as is alſo ſaid not to have happen'd to a needle that was thruſt in by a fourth (*x*), and diſcharg'd after fifteen days, at the time of making water; which needle it is probable had been obſtructed, in its paſſage through the urethra, at its loweſt and acute part, from this ſymptom; that ſhe complain'd only of a ſenſe of pricking about the neck of the bladder.

But although theſe things that I have ſaid about the point of the needle, or bodkin, being fix'd in the urethra, will be more illuſtrated by what will be hinted afterwards (*y*); yet I ſhall not deny that needles, which have been receiv'd quite into the cavity of the bladder, may nevertheleſs be ſo turn'd therein, as, in like manner, to be diſcharg'd by the meatus urinarius.

But that to thoſe two, whereof I ſpoke laſt, no calculous matter adher'd, within fifteen days, and even within the ſpace of a whole month, there muſt have been more than one reaſon, as we have known this matter to adhere to others in a much leſs ſpace of time.

For the urine, in all perſons, is not equally impregnated with particles fit to recede therefrom, and generate a calculus: and ſome retain their urine longer than others do; and the matter, or ſurface, of different needles is different. Thus Valliſneri (*z*) has ſuppos'd that a ſilver needle, or bodkin, was taken out from the bladder, without the addition of any calculous concretion, merely for this reaſon; that it was ſilver: which conjecture, however, will be much more credible, if it ſhall, at any time, be confirm'd by other experiments.

Thus a concretion ſeems more likely to adhere to a pretty rough ſurface, than to a very poliſh'd one: and hence, perhaps, we are to account for this circumſtance, that one part of the needle is, for the moſt part, cover'd with calculous matter; while the other is left quite naked: of the two girls, therefore, whoſe bodies I examin'd after death, in the former the head of the needle, or pin, had perforated the bladder; and in this other the point; becauſe, in the former, the concretion more eaſily gather'd round the lower, and perhaps rougher part; and in the latter more eaſily about the oppoſite extremity.

But out of thoſe women who have had a needle, which had been thruſt into the bladder; and a calculus, of a conſiderable ſize, form'd upon it; none,

(*t*) Differt. Anat. Pathol. l. 6. c. 8.
(*u*) Adnot. ad obſ. ſupra ad n. 19. cit.
(*x*) Ibid.
(*y*) N. 25. & ſeq.
(*z*) Obſ. cit.

that

that I remember to have read of, carried it for a very long time, yet had the needle extracted afterwards, and was ſav'd; except that Venetian woman, whoſe caſe is publiſh'd by Molinetti (*a*) (under whom ſhe was cur'd in the year 1649) with a figure of the needle, and the calculus, added thereto, which he us'd to ſhow in this anatomical theatre, where Moinichenius, in his epiſtle to Thomas Bartholin (*b*), aſſerts that it was ſeen by him; for Bartholin himſelf, as an author in other reſpects very learned, has through careleſſneſs aſſerted, could not be *witneſs* to the calculus, which was extracted after he had departed from Padua, and even from Italy (*c*).

And this calculus is the ſame which is ſpoken of by the ſame Moinichenius, in his obſervations (*d*): and this I have hinted at, becauſe, in the latter part of the annotation to the obſervation of Valliſneri, both of which I have often refer'd to, it does not ſeem to be acknowledg'd for the ſame, which Valliſneri had ſaid was wont to be ſhown in this theatre, and is now preſerv'd in his muſeum: for as to his ſaying, that it was taken from a Paduan, inſtead of a Venetian woman, that I ſuppoſe was the cauſe of the error, which would have been eaſily avoided, if Molinetti had been read, in whoſe book he ſeems not to know that it is deſcrib'd; and I alſo ſay that Lanzonus ſeems to have been ignorant of it, as he would, otherwiſe, in his ſcholium to that obſervation of Moinichenius, have been leſs ſurpriz'd "that a bodkin of bone ſhould "have lain buried ſo long in the bladder, without any injury to the bladder "itſelf: and even without any inconvenience to the girl."

This the words even of Moinichenius, and much more thoſe of Molinetti, did not ſuffer him to ſuppoſe; not only when ſpeaking of what ſhe ſuffer'd in the extraction, but alſo when deſcribing what ſhe endur'd, both before, and afterwards.

Yet if the bladder of this girl was much leſs hurt by the needle, than the bladders of thoſe whom I have written of; this probably happen'd becauſe the point of the needle ſtuck longer in the urethra than in the bladder; and was, at length, puſh'd out of this paſſage, by the weight of the calculus forcing downwards from above, as Molinetti found it.

22. Theſe calamities, and even death itſelf, may be prevented, by the perſon, who, being timely warn'd of the caſe, can extract the needle, before the accretion of any calculous matter; and this with ſuch dexterity, that the bladder, as far as it is poſſible to avoid it, may not be injur'd. And this has been done with ſucceſs, not only by others ſpoken of in the works of Valliſneri (*e*), but alſo by two of my friends in particular, whom I have commended to you already, I mean Marianus and Vulpius.

The former of theſe gentlemen; as he told me in a letter ſent to me in the beginning of December, in the year 1720; took out a needle from the bladder of a country-girl, who already made bloody urine, after having induſtriouſly brought it from a tranſverſe to a direct poſition. And it was a hair bodkin made of bone.

But that which I ſaw extracted by Vulpius, from a certain girl of this

(*a*) C. ſupra cit.
(*b*) 87. in hujus epiſt. cent. 2.
(*c*) Vid. cent. 1. epiſt. 73 & ſeq.
(*d*) Med. Chir. 22.
(*e*) Obſ. & Adnot. ſupra ad n. 21. cit.

city, was made of braſs. And he had extracted it, a few weeks before I receiv'd the letter from Mariani, with the uſe of no other inſtrument, than a very ſmooth iron wire; one extremity of which he had ſo incurvated, into the ſhape of a ſmall hook, and almoſt into the ſhape of a ring, that it could not hurt the bladder, and yet could lay hold of the pin; and would not ſuffer the head of it to ſlip, when once laid hold of.

However, if the caſe is not known till much later, and a calculus is already gather'd around the needle; and this calculus is not of ſuch a kind, as to allow of its being eaſily drawn out, through the urethra; it will be neceſſary, before the woman be ſubjected to the tortures of a very difficult extraction, to make diligent inquiry, not only whether the bladder, which it is natural to all to ſuſpect, but whether the ureters alſo, and particularly the kidnies themſelves (which ſuſpicion ariſes from our diſſections) have already contracted ſo much diſorder, that if even the needle and the calculus are taken away, the woman muſt die nevertheleſs.

And the conjecture of the kidnies being diſorder'd, will not be taken ſo much from the pains of the loins, (which we have ſeen may be abſent *(f)*; or, as it probably happen'd in the girl now in queſtion (*g*), may be obſcur'd by the much more cruel tortures of the bladder, according to the aphoriſm of Hippocrates (*b*), as from the ſuppreſſion of urine in the bladder, which has ſometimes preceded, continued for a long time, and been more than once repeated: or from the very frequent retention to avoid thoſe ſevere pains; or from too ſmall a diſcharge; in eſtimating which, however, we muſt take care, leſt we are at any time deceiv'd by the continual dripping of urine; calling to mind that, with this ſtillicidium, a retention thereof may be join'd; and that in a very great quantity, as I ſhall ſhow when I ſpeak on the ſubject of lameneſs (*i*): although this has, already, been ſufficiently ſhown, even by other letters (*k*). And indeed, the Sepulchretum will preſent us with a hiſtory (*l*), in which you will read that the neck of the bladder was found ſo lax from paralyſis, as "eaſily to admit the finger; for which reaſon the urine "came away, before death, without the patients feeling it: yet the bladder, "though almoſt twice as large as it naturally is, was entirely fill'd neverthe-"leſs." And how much the retain'd urine had inlarg'd the ureters, you have learn'd from thoſe letters; and how much it had, alſo, dilated the cavity of the kidnies, and had injur'd the ſubſtance thereof: or in one of them at leaſt.

23. And if theſe things happen from a part of the urine being retain'd; how much more will they happen from a long, and repeated, ſuppreſſion of the whole of it, within the bladder? Or from a frequent retention both of urine and of pus? At leaſt you have many examples of this kind, in the Sepulchretum, from a ſuppreſſion; among which are thoſe of Rumlerus *(m)*, and Ballonius (*n*); the latter of whom ſaw a very inlarg'd ſtate of the ureters; and the former theſe canals full of urine, and the kidnies of ſo large a ſize, in a child, as they could ſcarcely have had in an adult.

(f) Supra, n. 2. & ſeq. & n. 13. & ſeq.
(*g*) N. 20.
(b) 46. ſect. 2.
(*i*) Epiſt. 56. n. 12.
(k) Epiſt. 4. n. 19. & Epiſt. 39. n. 33.
(l) Sect. hujus 3. l. 27. obſ. 2. §. 5.
(*m*) Sect. 24. obſ. 12. §. 6.
(*n*) Ibid. §. 7.

And

And for this reaſon the celebrated Fantonus (*o*), with juſtice, ſuppos'd, that, where more urine is then drawn off by the catheter, than the bladder ſeems to contain, " it may partly flow down from the diſtended ureters alſo, and ſometimes even partly from the inlarg'd kidnies.

That is to ſay, when the bladder can now contain no more; whatever urine is continually ſecreted in the kidnies, firſt diſtends the ureters, and after that the kidnies themſelves alſo. Nor did this eſcape Aretæus (*p*). " Where " the urine is ſuppreſs'd," ſays he (meaning in the bladder) " the ſuperior " parts alſo, that is the kidnies, are fill'd: and the urinary ducts, which the " Greeks call ureters, are diſtended." And as theſe circumſtances happen, where there is not ſaid to have been any calculus, before, in the bladder, and where there is none at preſent; as may be read in the examples propos'd, and in like manner in that which is related by the authors of the *Commercium Literarium* (*q*), or in the acts of the Cæſarean Academy (*r*), or in the *Acta Helvetica* (*s*); for the diſcharge of the urine, from the bladder, being hinder'd by the abſceſs thereof, or by the coarctation of the paſſage through the proſtate; or the influx into the bladder being prevented, by the very great diminution of its capacity; " an inlarg'd ſtate of the kidnies, and of the ure- " ters," or, at leaſt, a dilatation of them ſo as to " exceed the thickneſs " of the little finger, or even equal that of the largeſt," immediately occur'd to the eye; as theſe things, therefore, happen, even without calculi; they certainly ought not to have been imputed only to the obſtruction of calculi in the ureters, which reſiſts the deſcent of the urine, by a man in other reſpects very experienc'd: nor ought it to have been argued, from the circumſtance of a certain perſon having only one calculus in the bladder but both his ureters dilated, that this calculus had neceſſarily been made up by the coalition of two; one of which had been obſtructed in one ureter, and the other in the other.

But as thoſe things, that I have mention'd, happen even where the bladder may be extended to a very great capacity; you, without doubt, perceive, how much more eaſily they muſt of courſe happen, if the bladder is either contracted into itſelf, as in one of the examples refer'd to, or has its cavity occupied by ſome foreign body internally, and leaves but little ſpace for the urine within; and ſometimes ſcarcely any; whether an iſchuria, or a ſtrangury only, be the conſequence.

Thus you have, in the Sepulchretum (*t*), an obſervation of Silvius, after an iſchuria, of the ureters " frequently admitting a man's thumb, and containing " urine within them, quite to the kidnies themſelves;" as he ſays, not in the ſecond, but in the firſt book, of his *Praxis Medica*, chapter the fifty-ſixth: and you have, alſo, that which is deſcrib'd as communicated to Riolanus (*u*), of the kidnies being " larger than uſual, by one half; fill'd and " turgid with ſerum:" and " of the ureters being very large, and ſo diſtend- " ed as to be capable of admitting the little finger, with eaſe.

And you will read in the ſame place (*x*), that Cattierus found, after the

(*o*) Diſſert. Anat. Renov. 7.
(*p*) De Cauſ. & Sign. Acut. Morb. l. 2. c. 10.
(*q*) A. 1738. Hebd. 32. n. 1.
(*r*) Tom. 1. obſ. 164.
(*s*) Tom. 1.
(*t*) Sect. 24. cit. obſ. 6. §. 8.
(*u*) Ibid. obſ. 16.
(*x*) Sect. hac 25. obſ. 8. §. 7.

ſtrangury,

ſtrangury, " the kidnies diſtended, and turgid with urine (from which parts " when cut into, it flow'd out copiouſly) and the ureters very wide :" and theſe were found to be " very large" by Fantonus (*y*), whom I have already quoted, even after a dyſuria, from a cauſe of the ſame kind; and in proportion as the dyſuria, like that, is more ſevere, it generally has the more violent ſtrangury join'd therewith.

As therefore, in the two girls, whoſe bodies were examin'd by me, there had been a very ſevere dyſuria, and the bladder was very much contracted, and almoſt wholly occupied with the calculus; it is not ſurprizing that the urine, before it could paſs out a little more freely from thence, through a paſſage made by the needle, ſhould ſtagnate in ſuch a quantity in the ureters, and kidnies, as to dilate, and even to vitiate them; eſpecially when mix'd with the pus, which flow'd from the ulcerated coats of the bladder.

For Euſtachius (*z*), although he affirm'd, that when every thing was in a natural ſtate, " nothing could go out from the bladder, through the meatus " urinarii," nevertheleſs ſaid, " that he had ſometimes obſerv'd the contrary " to happen in many patients, in a great and long ſuppreſſion of urine."

For the orifices of the ureters being very much inlarg'd alſo, together with the ureters themſelves, where they open into the bladder; no part of them now remains to paſs obliquely betwixt the coats of the bladder: therefore, not only a portion of the urine may then return that way; but even, after the ſuppreſſion begins to yield, or is already remov'd, the bladder, when contracting itſelf to diſcharge the urine, forces ſo much the more of that fluid upwards, through thoſe enlarg'd orifices, in proportion as it can expel the leſs downwards, through the orifice of the urethra, of which the calculus now and then obſtructs the paſſage.

But if it happens that the calculus has made only a ſlight obſtruction juſt before, and a greater quantity of urine is, for that reaſon, diſcharg'd thro' the urethra, ſo that but a ſmall quantity now remains in the dilated ureters; you certainly conceive, that, if the calculus again oppoſe itſelf to the urethra, ſoon after, the urine, and therewith pus, if it happen to be in the bladder, may eaſily be driven up through the ureters quite to the kidnies; eſpecially if the patient lies down while attempting to make water.

24. And theſe circumſtances are, as you ſee, equally common to males, as to females; and may, at length, be expected from theſe ſtones alſo, which do not form themſelves by accretion round a needle, in the bladder; as beſides that hiſtory, of a young man, which I deſcrib'd above (*), a great number of others, ſome of which I chooſe to take notice of here that you may add them to the Sepulchretum, demonſtrate.

Henricus Henrici, in his diſſertation *de Abſceſſu Meſenterii* (*a*), ſpeaks of a girl of five years of age, whoſe ureter, by reaſon of the urine flowing back into it, on account of a calculus of the bladder, " reſembled an inteſtine;" and the kidney on that ſide was three times the ſize of the other.

In the *Acta Eruditorum Lipſienſia* (*b*), an obſervation is extant, made by

(*y*) De Obſerv. Med. & Anat. epiſt. 8. n. 15.
(*z*) Tract. de Renib. c. ultimo.
(*) N. 15.
(*a*) §. 5.
(*b*) A. 1685. M. Mart.

Groenvelt

Groenvelt on a calculous girl, whoſe ureters reſembled one of the ſmall inteſtines, by their capacity being enlarg'd. And Mauchartus (*c*) ſaw the ſame canals (in an old man who had often been afflicted with a ſtrangury, from a calculus of the bladder) "inflated like the inteſtinum ileum," from urine like butter-milk, which they contain'd; at the ſame time that the kidnies were very large and unequal, and had their *pelves* diſtended to the magnitude of an egg.

Laubius (*d*) not only ſaw the ureters very much dilated, together with the *pelves*, from the ſame diſeaſe, join'd with the ſame ſymptom, but alſo with the kidnies diſeas'd; the one labouring under an atrophy, and the other being large, and ulcerous. After the ſame diſorders, Loſpichlerus (*e*) found the ureters, in a merchant, ſo diſtended with the ſtagnating urine, as eaſily to admit "the entrance of a pretty large thumb:" and Brunnerus (*f*) relates, that, in a man of princely dignity, they were leſs turgid; but that, the back part of the kidnies being cut into, "the urine had ruſh'd forth in a full "ſtream."

You will perhaps ſay, that the diſorders, which are ſpoken of, in the kidnies, and ureters, of thoſe who are afflicted with a calculus of the bladder, ought not to be imputed to this calculus, when it is already in the bladder, but when it ſtuck in the kidnies, or the ureters; and that Butzmann had judg'd in this manner (*g*), when, in a child, who had been long tortur'd with the diſorders we ſpeak of, he found a ſacculus full of pus, inſtead of the kidney.

And you will likewiſe ſay, perhaps, that it ſeem'd to Rudolphus Jac. Camerarius (*h*), in a little boy, who was affected in the ſame way, that the cauſe of a purulent kidney, and of a dilated, and eroded ureter, ſhould be accounted for in the ſame manner.

And indeed, that two obſervations of Coſchwitz (*i*), and one of Schulzius (*k*), are extant, in none of which mention is made of a calculus in the bladder; but in all of calculous pains: in the two firſt, it is alſo ſaid that the kidnies were purulent, and that the ureters had been ſurprizingly dilated: in the third, it is not only ſaid that they were dilated, but they are even deſcrib'd, as "writh'd into ſeveral folds," almoſt like the ſmall inteſtines, as in the ſtable-keeper (*l*); ſo great an effect had the urine produc'd, as even to enlarge the ureters longitudinally.

Yet that the urine had not flow'd back upwards, from the bladder, was demonſtrated by the orifices of the ureters: as both of them in this third obſervation, and one of them in the firſt, were ſhut up by angular ſtones ſticking therein, or ſmall teſtaceous concretions, as it were, bringing on a ſpaſmodic conſtriction by their ſharp points.

I, however, have never denied but that the kidnies may, ſometimes, and, if you pleaſe, often, be vitiated, and the ureters diſtended, in that other manner alſo. And I even ſay, that if this has preceded, and the calculi then

(*c*) Eph. n. c. cent. 8. obſ. 15.
(*d*) Ibid. obſ. 22.
(*e*) Cent. 1. obſ. 58.
(*f*) Cent. 9. obſ. 2.
(*g*) Dec. 3. a. 7 & 8. obſ. 27.
(*h*) Specim. Experim. circa Generat. ſ. 2. c. 3. hiſt. 3.
(*i*) Diſſert. de Valvul. in ureterib. §. 5 & 7.
(*k*) Diſſert. de Vaſſ. umbilical. §. 6.
(*l*) Epiſt. 4. n. 19.

at length falling into the bladder, and obſtructing, or pricking it, the ſecond ſhall of courſe ſucceed; the diſorder of the kidnies, and of the ureters, will be ſo much the more increas'd by the regurgitation of the purulent urine, in proportion as they have been more affected or weaken'd by the firſt mode of diſeaſe.

You plainly ſee then, what a prudent lithotomiſt ought to attend to, when ſent for to extract a calculus, from a patient who has ſuffer'd many and grievous diſorders therefrom; and how cautious he ought to be of undertaking the operation: or if he is, at any time, compell'd, by the impatience of the patient, to perform the extraction, at leaſt what he ought to predict, in regard to the danger and diſorder which may remain even after the ſucceſsful extraction of the ſtone.

"If ulcers of the kidnies," ſays Aretæus (*m*), "are brought on by cal-"culi, incurable diſorders ariſe therefrom: and a ſpeedy colliquation, and "death, come on:" in which opinion he was preceded by Hippocrates (*n*), who even pronounc'd in general, of ſuppurated kidnies, "that this diſeaſe "was very violent; and that many were, thereby, brought to a tabes renalis:" and if the patient is much advanc'd in age, not only (*o*) "that diſ-"orders of the kidnies, and bladder, are with difficulty cur'd," but alſo (*p*), "that he had not ſeen diſorders of the kidnies cur'd when the patient was "above fifty years of age."

I am not ignorant, indeed, how much is to be attributed to fortune in theſe things, as well as in moſt others: for I remember that the cure of a Venetian nobleman, of more than ſixty years of age, which had been deſpair'd of by Alghiſi, for more than one reaſon, and theſe not ſlight neither; was ſoon after undertaken, and very happily perform'd, by that friar Jaques Beaulieu, as I formerly declar'd at large, by letter, to the celebrated Morand, who requeſted it of me: and I have read of another cure in the Sepulchretum (*q*), which was more hazardous in the beginning, but had not an unſucceſsful event.

And in the Sepulchretum (*r*) is alſo extant the hiſtory of a princeſs, who; having been before tortur'd with very violent pains of the loins, together with a diſcharge of blood, and pus, in the urine; and being afterwards freed from them, and at length carried off by another diſeaſe; had a ſmall calculus in the kidney "around which a beautiful cicatrix, ſound, and clean, and of the "length of half an inch," had been form'd.

And indeed, read over the obſervation of Brunnerus, which I juſt now quoted, on the prince. You will not only perceive, that the ſame palliative method of cure, which I ſaid above (*s*) Valſalva had been wont to recur to, had been of ſo much advantage to this princely patient, that Brunnerus has juſtly ſaid, which I wiſh lithotomiſts would remember in hazardous caſes, "therefore lithotomy will not always be abſolutely neceſſary in the calculus "of the bladder;" but moreover, "what almoſt exceeds belief, that the "diſſecter had found cicatrices in the bladder," of the ulcers which the cal-

(*m*) De Sign. & Cauſ. Diuturn. Morb. l. 2. c. 3. in fin.
(*n*) De Intern. Affect. n. 16.
(*o*) Sect. 6. aph. 6.
(*p*) De Morb. Popular. l. 6. ſect. 7.
(*q*) Sect. ſuper 23. obſ. 4. §. 13.
(*r*) Sect. 22. obſ. 26. §. 8.
(*s*) N. 16.

culus, and a contrary method of treatment, had before produc'd: although the patient was more than ſixty years of age.

But, without doubt, it is a very different thing to conſider what rarely happens, and what happens the moſt frequently: and, to return to the caſes of the girls we were ſpeaking of, it is one thing to be ſent for in time, and another when the diſeaſe is very far advanc'd: this will appear from an obſervation that was written to me, in the ſame letter, which I mention'd above (*t*); that is by the very experienc'd phyſician Laurence Mariani.

25. A young country-girl, having had a bone bodkin, which ſhe us'd for her hair, drawn into the bladder, in the ſame manner as in thoſe already ſpoken of; although it created pains, and many uneaſineſſes, they did not, nevertheleſs, extort a confeſſion of the fact, before that a calculus, having form'd itſelf around the needle, ſhe was affected with intolerable tortures.

Then, at length, the ſituation thereof being examin'd, the point of the needle was found to be prominent within the cavity of the vagina; the urethra being perforated near to the lower part of that cavity.

It ſeem'd to Mariani, that, if the urethra were cut into a little, in a longitudinal direction, this point might be drawn into the urethra; and, by this means, the needle and the calculus being plac'd in a direct ſituation, it might be tried whether by ſcaling away this calculus, which was, perhaps, of a fragile nature, gradually and dexterouſly, it were poſſible to reduce it to ſuch a ſtate of thinneſs, as to ſuffer it to be taken away with the needle.

But as others were of a contrary opinion, it happen'd that nothing at all was attempted; but that the girl was deſerted, and given up to her miſerable lot. In proceſs of time the calculus, and the pain alſo, were increas'd; and the whole orifice of the bladder being now almoſt ſtop'd up, but a ſmall quantity of urine, and that very ill-ſmelling, was diſcharg'd. And a fever alſo coming, on an end was, at length, put to her miſerable life.

The belly being open'd, pus was ſeen in the pelvis thereof, and was ſuppos'd to have been pour'd out from the kidnies, which were ſuppurated. In the bladder, which was corrupted with a ſphacelus, was a calculus of the figure of a pear; for the more it deſcended from the head, and the upper part of the needle, the more was it extenuated.

When it was taken away from the bladder, to which it adher'd in ſome part, it left ſcales agglutinated to that part: and yet when put in the ſcale, together with the needle, was then equal to eighteen drachms; but afterwards, when this account was ſent to me, it weigh'd no more than fourteen.

26. The perſon who, as I have ſaid above (*u*), had ſucceſsfully extracted the needle from another girl, before a ſtone had been form'd upon it, did not deſpair but this alſo might be taken out; even when the calculus was begun, and increas'd to a conſiderable ſize; if, the point of the needle being reduc'd into the urethra, and held faſt with a forceps, he endeavour'd, previouſly, to extenuate the calculus, if it were poſſible, before he drew it out; in imitation of Benivenius (*x*), who diminiſh'd it in the urethra of a virgin, in ſome meaſure, previouſly to its extraction; or if this did not ſucceed

(*t*) N. 22.
(*u*) N. eod. 22.
(*x*) De Abditis Morbor. Cauſis c. 80.

according to his wiſh, then to imitate Molinetti (*y*), who had taken care to have it extracted by force, at all events; and it is probable that ſomething might even then have been of ſervice.

But after the calculus had been ſo much augmented in its ſize, and with this every diſorder had increas'd, who is there that could hope for any advantage? And if the calculus had been ſo much thinner, and the paſſage, through which the cavity of the urethra, communicated with the cavity of the vagina, had been ſo much larger, as they muſt both of them have been in a caſe of this kind, which, being ſent from Italy, you read of in the hiſtory of the Royal Academy of Sciences at Paris (*z*), perhaps this alſo would have fallen out into the vagina, in the ſame manner as that did.

But I ſhould believe, even in that caſe alſo, that the paſſage had been from the upper part of the urethra, rather than from the bladder, into the vagina; ſince we read that an afflux of urine, through the vagina, did not ſucceed, but only an incontinence of urine.

For whether the needle is not wholly ſnatch'd away from the fingers, into the bladder, in many perſons, as I conjectur'd above (*a*); or, if you pleaſe, whether, after it is wholly carried into the bladder, it is again puſh'd back into the urethra, by the contraction of the bladder; although the former of theſe ſuppoſitions ſeems to me the more probable, ſince the point that was held in the fingers, and not the head, or, at leaſt, in the examples of Molinetti, and Mariani, and in as many that I ſhall immediately produce, was certainly turn'd towards the urethra; nothing can more eaſily happen, than that, the head being puſh'd forwards, by the poſterior part of the bladder, in conſequence of the annex'd vagina, then libidinouſly turgid, being, in like manner, forc'd forwards, the point of the crooked needle is driven backwards; and by this means fixes itſelf into the poſterior part of the urethra, eſpecially if it be very ſharp: and at length, being driven by the frequent contractions of the bladder, perforates that part.

And as this happen'd in a young country-girl, who applied to our ſurgeons at the time of my writing this letter, ſo it would alſo have happen'd in a young virgin of fourteen years of age, the caſe of whom was related to me by a ſurgeon, whoſe preceptor in anatomy I had been; not long after the death of the other, whoſe diſſection I have deſcrib'd to you (*b*).

This girl was in a ſitting poſture when ſhe did the ſame thing as the other, and had thruſt the head of the bodkin, which was almoſt as thick as the urethra itſelf, very high into this meatus; and being terrified by the ſudden appearance of her mother, at once let go the bodkin, and found it drawn up very high, at the ſame time.

Almoſt four days ſhe bore the pains and uneaſineſſes in ſilence; on the fifth ſhe told her mother the affair, and her mother told it to the ſurgeon, of whom I have ſpoken. Who ſuppoſing, from the ſeat of the pricking, of which the patient chiefly complain'd, that the lower part of the needle ſtuck fix'd about the middle of the urethra; and fearing leſt, if any inſtrument were introduc'd into the urethra, to extract this inherent body, it ſhould be entirely

(*y*) C. cit. ſupra ad n. 21.
(*z*) A. 1735. obſ. anat. 10.
(*a*) N. 21.
(*b*) N. 20.

puſh'd on into the bladder; he with the conſent, and even at the requeſt, both of the mother and daughter, introduc'd firſt one finger, and then another, into the vagina, and by this means ſo far mov'd the needle downwards, with no leſs induſtry than ſucceſs, that the point began to appear at the orifice of the urethra, and could be laid hold of with the forceps.

Thus, with the loſs of two drops of blood only, and without any inconvenience remaining behind, the needle, which he brought to me, was taken out. This needle, or bodkin, was, or, at leaſt, ſeem'd to be, of tin, and was of that kind which women uſe for their hair, being four inches long, and having a very ſharp point: and the ſurgeon had obſerv'd that a little tartarous matter had already begun to adhere to it, in ſeveral places; which matter was, afterwards, very improperly rub'd off.

27. I would not have you be chagrin'd to find that what has been aſſerted by ſome perſons, ſeems to be confirm'd by the number of examples I have added; I mean that the women, to whom theſe things happen, "are the "greateſt part of them Italians." I could wiſh all our country-women knew how many of their ſex have been untimely carried off, by the moſt excruciating tortures from this cauſe.

But how can country-girls, or girls of the lower claſs, and ſuch as even their tender years render unexperienc'd, be acquainted with theſe things? Yet ſuch inſtances ought not to be paſs'd over in ſilence, that phyſicians, being admoniſh'd by the frequency of them, may, if any girl begin to complain of a difficulty of making water, inquire very narrowly into every circumſtance; and, by a cautious dexterity, force out the truth, while it is as yet poſſible to adminiſter relief.

However, neither theſe inſtances are common to all parts of Italy, (or, at leaſt, not to ſome of them, where I have been for a conſiderable time) nor are all foreign countries free therefrom; which examples it is by no means neceſſary for me to take notice of here, with an odious diligence: ſome of them you will learn, if you aſk me how, from reading Vallisneri (*c*), others from Platner (*d*); and, finally, ſome you will meet with in the reading of other authors.

Nor do I doubt but more examples would be extant, if as many bodies were diſſected in every other place as there are in Italy; or if ſhame did not oblige moſt women to conceal the true cauſe of their diſeaſe. For others; as even among the women of this region a country-girl was about to do (*e*); and as ſome, according to Alghiſi (*f*), and Vallisneri (*g*), have done; conceal the whole affair with the moſt obſtinate ſilence: it therefore happens, that the needle, of which no body has any ſuſpicion, is buried together with them.

And ſome girls pretend to have ſwallow'd it; in order that phyſicians, notwithſtanding they find it either in the living, or the dead body, may be deceiv'd by ſuch an aſſertion.

There was a time when ſuch deceptions took place even in Italy; as by that Venetian virgin ſpoken of by Alexander Benedictus (*h*), about the lat-

(*c*) Obſ. ſupra ad n. 19. cit.
(*d*) Diſ. de Calc. ad Veſic. adhær. §. 10. not. & *p*.
(*e*) N. 20.
(*f*) Litotom. c. 3.
(*g*) Adnot. ad cit. obſ.
(*h*) Hiſt. Corp. Hum. l. 2. c. 9.

ter

ter end of the fifteenth century, who had a large calculus form'd upon a very long bodkin, ſuch as women uſe in their hair: for notwithſtanding this author has rejected the opinions of thoſe (*i*), who ſuppos'd the needle to have paſs'd through the veins, from the ſtomach to the liver, from thence to the heart, and from this viſcus to the kidnies, and ſo on to the bladder; yet he himſelf thought, "that by its point, it had, gradually, and in a long courſe of time, "penetrated through the inteſtines, and made a paſſage for itſelf to the blad-"der:" although he is much to be commended for having diſcarded the opinion, which, to my great aſtoniſhment, was embrac'd by others, even a long time after, and is not eaſily to be imitated in propoſing another, which had a much greater number of followers.

Nor is the queſtion, here, of any ſlender needle, but of thick ones; and very often of thoſe which have a large head at one extremity, and, at the other, not a very ſharp point; and always (I mean in thoſe ſhame-fac'd virgins, who ſay that they had been ſwallow'd by them) purpoſely, as it were, going to the bladder; and not attended with thoſe previous, and concomitant ſymptoms, and pains, which a circumſtance and paſſage of this kind requir'd.

Wherefore this kind of credulity is now more rare; or, at leaſt, among the more learn'd Italians; the retention of which, in ſome other countries, I ſee pretty clear marks of, even in ſome excellent books. It remain'd to take notice not only of the needle, but of the caſe wherein they are kept, having paſs'd the ſame way; ſince that excellent man, Benevoli, ſays, that he had extracted one from the bladder of a Tuſcan girl (*k*).

Here again, you will perhaps be diſpleas'd, that a vice almoſt incredible ſhould be imputed to an Italian girl. But read, I beg of you, the annotations that are made to article one thouſand three hundred and fifty-nine (*l*) of Platner's *Inſtitutiones Chirurgiæ*, and you will ſee whether ſhe was the firſt that had attempted this thing.

Yet if they had made uſe of that way of Alexander Benedict, to explain the paſſage of any needle, not into the female bladder; into which a very ſhort, and quick opening, lies from without; but into the male bladder, the paſſage into which is much longer, and more winding; I ſhould more readily, as I have ſaid in a former work (*m*), and particularly in ſome caſes, fall in with their opinion.

And I wiſh it was in my power to fall in with their opinion in this caſe that I ſhall immediately deſcribe to you: I ſhould then have complain'd leſs at that time, and even now, that, in proportion as a thing is more certain, it is ſo much the more difficult to be conceiv'd of.

28. A country-man, of forty years of age, had labour'd, for a long time, under a very great difficulty of making water: nor on this account only, did he come into this hoſpital, a month before he died, but on account of an ulceration of the ſcrotum, and a fever likewiſe. To his fever was firſt added a diarrhæa, and after that a coſtiveneſs: and a greater waſting of fleſh came on every day; which being carried to its greateſt poſſible extent, and his face

(*i*) L. 5. c. 13.
(*k*) Obſerv. 42.
(*l*) Not. *b*.
(*m*) Adverſ. 3. animad. 36.

being

being become cachectic, he was, at length, taken off by the old pains in his bladder.

When he was very near death, he ſeem'd to be deſirous of what few men of his condition in life are; I mean that the cauſe of this very long, and troubleſome dyſuria, ſhould be inquir'd into by diſſection. He therefore call'd the ſurgeon to him, and told him that, two years before, he had introduc'd a hair-bodkin made of braſs, into the urethra; but whether it had fallen out, or ſtill remain'd there, he ſcarcely then knew, and was ignorant even to the preſent moment.

But in what manner, and for what purpoſe, he had introduc'd it, he did not ſay, nor did the ſurgeon inquire; as the man was now dying, and had declar'd even thus far, with ſome degree of ſhame. The ſurgeon having made this relation to me, and I being at that time accidentally engag'd in demonſtrating ſome things, in the hoſpital; both natural and preternatural; I immediately order'd the carcaſe to be brought, in order to add this inquiry, which I ſuppos'd to be ſhort, to the others.

And as I ſuppos'd that the needle had ſtuck at the flexure of the urethra; or if it had accidentally fallen out, that it muſt, at leaſt, have left ſome great marks of injury there; I thought proper that the urethra ſhould firſt of all be laid open, longitudinally, to that part.

The ſcrotum therefore, which was ſtill ulcerated from the dripping of the urine, as I ſuppoſe, being cut into, the teſtes ſeem'd to be larger than they naturally are, and quite tumid; but it eaſily appear'd that this was owing to the coats being become very thick and white: and not to their proper ſubſtance being diſtended. For this, notwithſtanding the tunica vaginalis adher'd, in ſeveral places, to the tunica albuginea, was pretty ſound; except where it is connected with the inferior globe of the epididymis: for theſe parts were purulent, and blackiſh in their colour.

The urethra being then open'd; from its external orifice, through the whole inferior ſurface of the penis, and the perinæum; I found the internal ſurface of this meatus to be neither ulcerated, nor cicatriz'd, nor red: and I even found it to be every where whitiſh and ſmooth; but become pretty much thicken'd.

Thus when I perceiv'd that I muſt carry on my reſearches ſtill farther, I immediately order'd all the other parts, that belong to the urinary ſecretion and excretion, to be taken out. The bladder was without urine, and contracted into itſelf, but of an irregular figure. For at the upper and right ſide, it grew out into a kind of ſmall bag, of a ſquare figure, that was already blackiſh in its colour.

What this ſac was, and what it contain'd, appear'd plainly to all; after firſt cutting into the upper part of the urethra, which ſtill remain'd to be examin'd on the anterior ſurface, and after that the bladder itſelf. And in this part of the urethra, quite to the whole ſeminal caruncle; which was ſtrigoſe and ſhrivel'd, yet furniſh'd with a ſinus according to its natural ſtate; we found no more traces of diſorder, than in the other part of the urethra, that we had before diſſected.

But immediately above the caruncle, the whole internal ſurface, not only of the proſtate gland, but of the bladder alſo, was found to be ulcerated;

and

and cover'd over with a kind of whitiſh eſchar, as it were, or cruſt. And the coats of the bladder, as was obſerv'd by cutting into them, had become thick; being partly livid, and black, partly white, and almoſt ſcirrhous. Nor did the ſac, of which I have ſpoken, put on any different appearance: for it not only communicated with the bladder, by an orifice of equal extent with itſelf, but was even made by a production of all the coats of this reſervoir.

Within this bag was a calculus, of the bigneſs of a middle-ſiz'd, or rather of a ſmall walnut; being ſomewhat like this nut even in its figure, and ſmear'd over with a humour that reſembled the white of an egg, but not in great quantity: from the ſide of this calculus, pretty near to one extremity, came out that needle, and was prominent to the extent of two fingers breadths; the remaining part of it, which belong'd to the head, being buried deeply, or, at leaſt, very firmly, within the calculus; ſo that it might ſeem to be equal to, or even perhaps to exceed, another finger's breadth.

But the other part, which belong'd to the point, that was very ſharp, and was itſelf perfectly ſtrait; in conſequence of its being a part of one of thoſe needles, which is pretty ſtrong, and not thin; only paſs'd obliquely downwards beyond the orifice of the ſac, ſo as to fix its point into the lower, and left ſide, of the contracted bladder; from whence it was drawn out with great eaſe.

What weight the calculus was then of, I did not inquire: but, on inquiring, ſeven years after it had been found, it exceeded, together with the needle, two drachms and as many ſcruples, by ten grains; or, if you pleaſe, according to the uſe of medical weights here, by half a ſcruple. In the place where I kept it, was a yellowiſh powder depoſited; for it is of a ſurface not ſmooth, and, for the moſt part, inclining to that colour.

In the bladder, however, the orifices of the ureters were much larger than they generally are: the ureters were very wide, and diſtended with pus to ſuch a degree, as, in ſome places, to equal the thickneſs of a man's thumb. The kidnies alſo were turgid, and much enlarg'd beyond their natural ſize: being externally pallid; but internally ſemiputrid, and abounding with a cineritious pus. To examine the other parts of this body I thought unneceſſary; and indeed had not leiſure to do it.

29. This rare, and if you weigh all the circumſtances properly, this perhaps ſingular obſervation, I made on the twenty-ninth of December, in the year 1742, before a very crouded circle of ſtudents and doctors; and the ſummary thereof I ſent, in a letter, to the celebrated Morand, in July of the following year: this eminent man wrote back to me, that he had communicated it to the Royal Academy of Surgeons, and nothing more on this ſubject that ever came to my hands.

But my reaſon for ſending him the account, was that, if any thing of the like kind had happen'd at Paris (a city very famous for the number of its inhabitants, and beſides other ſciences, particularly for that of lithotomy) I might be inform'd thereof; and might not be ignorant in what manner they ſuppos'd this to have happen'd. When I ſpeak thus I mean to ſpeak of a needle of the ſame length, firmneſs and ſtraitneſs, as ours is; for that a ſhorter, or flexile needle ſhould have reach'd to the bladder, through the paſſage of the male urethra, would not be equally ſurprizing.

I had

I had read, indeed, in Parey (*n*), of a calculus taken out of the male bladder, "of the thickneſs of a walnut, in the middle of which a needle, perfectly like thoſe commonly us'd by ſempſtreſſes, was found to be fix'd." But if it was buried within the calculus, it was of courſe ſhorter than ours: if it was prominent from the calculus, we are, nevertheleſs, ignorant what length it was of.

And in what form it appear'd; whether it was a little bent, or ſtrait; but in particular, whether it had come in by way of the urethra, or not; we are quite ignorant. For there might be different ways whereby a needle, eſpecially one that had no head, might come into the bladder.

Thus that very learned man Mead ſuppos'd a ſimilar needle; which Cheſelden (*o*) gives a figure of, if I rightly recollect, in the thirtieth plate; and which, having a calculus form'd around it, had been taken out from the bladder of a boy, by inciſion; to have enter'd in by the perinæum: and Valliſneri (*p*) ſuſpected that a ſmall branch of a certain plant, which he had found within a calculus of the bladder of a boar, had come thither through a wound that had been inflicted on the belly of this animal, by ſome hard and ſharp branch of the thick foreſt, through which he had run: but whether another "kind of woody little body," which is ſaid to have been found in the bladder of a domeſtic ſow (*q*), might have come thither in the ſame way, you yourſelf will determine.

Moreover, there might be another paſſage for a needle; I mean that which is propos'd by Benedict, from the inteſtines into the bladder; for although I ſaid above (*r*), that this was not readily to be admitted, yet I do not think it is always to be rejected; eſpecially when what I have there objected can have no place.

I will endeavour to illuſtrate what I mean, by an example which I do not remember to have been refer'd to, by thoſe who have taken notice of others of this kind. You have it among the *Reſponſiones Medicinales* of Claudinus (*s*). A boy had ſwallow'd a needle, which he himſelf, after ſome years, took out of his urethra, where it was driven by a very great effort in making water; having a thin ſtone form'd upon it.

By what paſſage this needle had come into the bladder, or at leaſt into the urethra, was demonſtrated by long, round, and living worms; ſome of which he diſcharg'd, in his urine, in the firſt years after having ſwallow'd the needle: and after pains of the urinary parts, and even after the needle was taken away, another living worm of a conſiderable length was diſcharg'd, and not without fœtid matter, which was of a black colour.

And as you ſee that this example may be added to thoſe which I have taken notice of above (*t*), when ſpeaking of worms diſcharg'd by the urethra; ſo you alſo perceive, that, although the needle, in the caſe of this boy, exceeded two inches in length, and was not without a head, yet it cannot be transfer'd to thoſe girls, who ſay that their hair-bodkins have come down from their mouths into their bladders; if it be certain that they have ſuffer'd none

(*n*) Oper. l. 24. c. 19.
(*o*) The Anat. of the Human Body.
(*p*) Opere tom. 1. p. 6. nella lettera al Giorgi.
(*q*) Eph. n. c. cent. 7. obſ. 7. cum Schol. o.
(*r*) N. 27.
(*s*) Reſp. 40.
(*t*) N. 6.

of thoſe ſymptoms, which demonſtrate that a paſſage, from the inteſtines to the bladder, was laid open: yet as this is not certain in regard to the man ſpoken of by Parey, nothing forbids us to ſuſpect that the needle might have made the ſame kind of paſſage for itſelf, formerly, in him.

But there are others, in whom there is no room for theſe ſuſpicions, as they, like ours, confeſs the contrary; one, that he had thruſt into the bladder, thro' the urethra, an ear of barley; the other, if I underſtand rightly, the thin extremity of a ſmall iron ſpatula or ſpoon. And I confeſs it, becauſe I have read of the latter in Dionis (*u*), and of the other in Platner (*x*). But of what length the extremity of that ſpoon was, and whether it was at all inflected, I do not yet know; how flexible the ear of barley is, there is nobody who is ignorant.

Beſides both of them, as it ſeems to me, or at leaſt one of them, has confeſs'd that what he had begun to thruſt in, he had forc'd on farther, and even quite into the bladder. But our man was ſo far from puſhing forwards the needle, which he had introduc'd into the beginning of the urethra, that he was, as I have ſaid (*y*), quite ignorant whether it had fallen out, or remain'd.

Let us ſuppoſe, however, that he did puſh it forwards; yet when he had brought it on to that flexure, which is in the perineum, how, I beſeech you, could he, at length, get over that obſtruction? and how could a needle of ſuch a length, and ſo ſtrait, be turn'd upwards? Why did it not ſtick there? Why with ſo ſharp a point, if this went foremoſt, did it not fix itſelf there? Or if, as is moſt probable, the point did not precede, why did it not injure that part, while the needle was turn'd? For there was, as I have ſaid, no cicatrix there.

Theſe therefore, are things which I confeſs I cannot yet attain to the compleat knowledge of: and all very ſkilful men have confeſs'd the ſame; in particular Cocchi and Benevoli, who each of them viſited me with very great politeneſs, as they paſs'd this way; and ſaw, and conſider'd, the ſubject very attentively.

It is true, that, in regard to very ſmall, and for that reaſon flexible, needles, I ſhould not be in any doubt; much leſs in reſpect to very ſlender wax candles: of which if you read the caſe, that in all appearance is the ſame, although it is repeated, in other words, twenty-five years after (*z*); you will be leſs ſurpriz'd, even if you admit only of ſome part, that the female bladder ſhould ſuddenly draw a needle into its cavity; when you alſo find that the male bladder "had ſuddenly drawn in a candle."

30. As to the kidnies and the ureters, being both of them enlarg'd, in our ruſtic; and both of them being fill'd with pus; theſe circumſtances doubtleſs agree with thoſe things which are laid down and explain'd above (*a*). And from the ſame cauſe, that is from the urine being very frequently retain'd, on account of the very violent dyſuria; and for that reaſon forcing ſome part

(*u*) Cours d'Operat. de Chirurg. 3. Demonſtr.

(*x*) Diſp. ſupra ad n. 27. cit. §. 11.

(*y*) N. 28.

(*z*) Eph. n. c. cent. 1 & 2. obſ. 152. & act. tom. 4. obſ. 24.

(*a*) N. 22. 23.

of the bladder outwards, where it was weakeſt; I think that the ſacculus, in which the ſtone lay, is to be accounted for.

And that this was my opinion, even at the time when I firſt wrote, in the Adverſaria (*b*), what I had obſerv'd of theſe ſacculi, you very well know, from what is there ſaid. But that this was afterwards confirm'd by others, I am not ignorant; as they produc'd the examples of gravid women, whoſe bladder had been, in ſome meaſure, relax'd, from a violent iſchuria, into ſacculi of this kind; or herniæ; by which name I had alſo call'd them: yet I do not very well ſee, why, among theſe examples, is reckon'd that which is extant in Ruyſch; in his eighth Theſaurus, number one hundred and two; unleſs, perhaps, that, which is there deſcrib'd, is not intended, but the other which is repeated in the ſame place, on occaſion of the foremention'd inſtance; that is to ſay the firſt obſervation of the Centuria of Ruyſch: with which obſervation you will compare another given us, in the acts of the Cæſarean Academy (*c*); and you will eaſily underſtand, what the tumour was, in a very noble matron, which hung down from the genitals; upon the inciſion of which a large calculus was diſcharg'd, together with the urine: and an incontinence of this fluid, or rather a ſtillicidium, or continual dripping, ſucceeded, in conſequence of the wound that had been made, not being heal'd.

Yet theſe two obſervations, and ſome others, that may ſeem to be of the ſame kind, of Rembertus Dodonæus (*d*), ſhow that the ſac was not form'd more by the impulſe of the urine, than by the weight of the calculi, or at leaſt not more increas'd; and that in the lower part of the bladder: where Riolanus had alſo ſeen it formerly (*e*), and from calculi indeed (*f*), but at the ſides of the bladder, and ſometimes only.

Yet now I ſee, that they are ſuppos'd at the ſides, and particularly the left, in moſt perſons; and that by ſome, at leaſt, as if the appearance were natural. What I have ſeen of the figure of the human bladder, in a natural ſtate, I have already declar'd in a former work (*g*). Whether it has theſe ſinuſſes, or appendages, as they call them, beſides, I ſhall not willingly diſpute here.

It would be ſufficient for me, if all the circumſtances, which I advanc'd in regard to this figure, before Weitbrecht, were related in ſuch a manner, by ſome perſons, that I might not ſeem, with divine permiſſion, to have propos'd them after him: although nobody can have read that diſſertation of his, without being put in mind of the time, in which each of us publiſh'd our remarks; I mean by that very annotation, which the no leſs juſt, than learned, imperial academy at Peterſburgh (*h*) has, of its own accord, added to that diſſertation.

Nor have there been ſome wanting, who have confounded thoſe ſinuſſes ſeen by Riolanus, and others, promiſcuouſly with thoſe, which I had obſerv'd, from the urine being too long retain'd in the bladder, and not from calculi, of which firſt kind thoſe two appendages, probably, might be, that Berger

(*b*) III. Animad. 36.
(*c*) Tom. 4. obſ. 95. in fine.
(*d*) Medic. obſ. c. 45.
(*e*) Anthropogr. l. 2. c. 28.
(*f*) Encheirid. anat. l. 2. c. 30.
(*g*) Epiſt. anat. 1. n. 61.
(*h*) Comment. tom. 5.

(*i*) found in the bladder, like ſacculi; for they were full of urine, and were in an old man who had died of a ſuppreſſion of urine: and that they were of this kind, we ſhould more certainly know, if he had obſerv'd the places from which they were prominent.

But there had been perſons before, who explain'd the origin of ſacculi of the bladder in a different manner (*k*); ſome accounting for them even from a primeval conformation; and others from a calculus, which, growing by degrees, betwixt the coats of the bladder, forms to itſelf a ſac, hanging from the bladder by the ſeparation of theſe coats: and the internal coat being at length ruptur'd, or corroded, the calculus communicates with the cavity of the bladder; which explanation of the communication, a certain perſon not long ago made his own; although in the whole of that diſputation, in which he has canvaſs'd the various modes, wherein calculi adhere to the bladder, he has no where expreſly taken notice of thoſe ſacculi that are prominent on the outſide of the bladder.

However, I am not altogether repugnant to theſe two origins of ſacculi being ſuppos'd, in ſome certain caſes; though that they ſhould be ſuppos'd in all we cannot allow: as not only other obſervations of ours, which have been deſcrib'd in other places, but as that alſo, in particular, which was juſt now deſcrib'd (*m*), are openly repugnant thereto.

For you ſee from the Adverſaria (*n*), when, in a great drinker, ſome ſacculi were already form'd, and others began to be form'd, that the beginnings of them had appear'd only in thoſe places, where, by reaſon of the ſpaces, which the muſcular fibres of the bladder leave betwixt each other, the coats could be urg'd outwards: and who can imagine, that the ſaccuſus of the country-man had exiſted from the original formation, rather than that it had ſucceeded to the very frequent retention of urine, from the needle, or calculus.

Nor indeed could a calculus, which was form'd upon a needle, that was thruſt into the cavity of the bladder, have been form'd betwixt coat and coat; nor conſequently, could it have burſt through the internal coat, to open a paſſage for itſelf into the bladder. And there has not even been one, out of all thoſe in whom I have found theſe ſacs, wherein that coat was ruptur'd: whereas in all, as well as the other coats, it was relax'd, and had expanded itſelf, in order to form the ſacculus; as you will learn from reading over again the diſſections of the countryman, and of a certain old man of whom I wrote to you formerly (*o*).

Nor did I ſee calculi within thoſe ſacculi, if you except the country-man; nor yet did I underſtand that there had been any before: nor did it happen to me to meet with theſe ſacculi, at the very mouths of the ureters, or beneath; but above them and even much above; as you will clearly perceive from thoſe obſervations of mine, which I have refer'd to.

31. Theſe ſacculi, then, are different from thoſe which are form'd by ſtones ſticking at the narrow orifices of the ureters, and increaſing there; as

(*i*) Hiſt. de l'Acad. R. des Sc. a. 1704. obſ. anat. 22.

(*k*) Sect. hac Sepulchr. 25. in Schol. ad obſ. 3.

(*l*) Ibid. in Schol. ad §. 7. obſ. 8.

(*m*) N. 28.

(*n*) Animad. cit.

(*o*) Epiſt. 21. n. 15.

Petrus

Petrus Francus (*p*) formerly knew, although he has neither been quoted by Riolanus (*q*), nor by Willis (*r*), nor by any of the great number of other authors, that I know of, who have been of the ſame opinion, even to this time, Platner only excepted (*s*); who has alſo given a copy of that ſmall part of his very rare book, which relates to this ſubject.

But as to Platner's having follow'd Littre (*t*), and Abraham Vater (*u*), ſo far as to add, that, unleſs the calculi fall out from thence, "they ſeem to "make a new paſſage for themſelves; while, the bladder being now and "then very ſtrongly contracted, they are propell'd, within the coats of it, "towards the cervix: and that this is the reaſon why they are often found "in places that are very remote from the mouths of the ureters;" I ſhould readily fall in with his aſſertion, when paſſages lie open from the loweſt part of the ureter (as were ſeen by Littre) to thoſe places; which, when once open'd by calculi, it is moſt probable muſt be kept open afterwards, by the urine that is continually following them: and I do not doubt, but that the places very remote from the mouths of the ureters, are always to be underſtood as being downwards only; even from conſidering the words that I juſt now copied; to which part not only the weight of the urine, deſcending through the ureters, urges, but the contraction of the bladder forces, the calculi.

In what manner, then, ſhall we explain the many other obſervations, of calculi of the bladder, included in a membrane, which Platner himſelf takes notice of in the ſame place? Were all theſe at the mouths of the ureters, or below them? And were they thus alſo, in the other obſervations beſides theſe, that may be read in the Sepulchretum (*x*)? In one of Tulpius (*y*) in particular (for although there are many there from Tulpius, Platner did not refer to them all, but only to ſome one of them) in which nine and thirty calculi are deſcrib'd in the bladder; "every one of which lay wrap'd up in "its proper receptacle, and indeed ſo cloſely, that in the beginning, the "ſurgeon was led to ſuppoſe no calculi to be contain'd therein?"

To this obſervation join another of Holtzappellius (*z*), which ſpeaks of two and thirty calculi, "all included in their proper coats, and contiguous "to each other; ſo that theſe calculi, each in its little cavity, fill'd up the "whole concavity of the bladder; juſt as bees, in their ſmall caverns, fill "up the honey-comb; only a very ſmall paſſage for the urine remaining."

Were all theſe, then, wrap'd up, in this manner, below the orifices of the ureters? And indeed it has ſometimes come into my mind, as I have found (*a*) calculi within the biliary glands of the gall-bladder, to conſider from thence, whether it is poſſible, that, through the orifices of the glands of the bladder, which, as I have ſometimes found them open in the ureters, ſo alſo nothing forbids us ſuppoſing to be ſometimes open in the bladder, which is but a continuation, as it were, of theſe canals; whether, I ſay, it is

(*p*) Traité des Hernies c. 31.
(*q*) Anthropogr. l. 2. c. 28.
(*r*) Diſſ. de Urin. c. 5.
(*s*) Diſp. ſupra ad n. 27. cit. §. 13. & not. ibid. n.
(*t*) Mem. de l'Acad. R. des Sc. a. 1702.
(*u*) Diſſert. qua obſ. rar. Calcul. &c. §. 4.
(*x*) Sect. hac. 25. obſ. 8. §. 7. 13. 14. & ſect. 24. obſ. 10. §. 1.
(*y*) Sect. 23. obſ. 7. §. 1.
(*z*) Ibid. obſ. 4. §. 2.
(*a*) Epiſt. 37. n. 29.

poſſible

poſſible that through the orifices of theſe glands, very ſmall pieces of ſand may creep into the cavities of the glands, and there increaſe into calculi, which will be inherent in their alveoli.

But till I happen to light on a bladder, which has a calculus ſhut up, betwixt the coats, in ſuch a place, as it could not poſſibly have come to, from the ureters; and have an opportunity of examining it very attentively; I ſhall chooſe rather to withold my aſſent from this hypotheſis of mine; and as I have learned from my obſervations, refer'd to above (*b*), that the orifices of the ſacculi are often much leſs than the ſacculi themſelves, I ſhall alſo give ſome room for another conjecture; as, for inſtance, if a very ſmall calculus having enter'd in, the orifice ſhould from any cauſe whatever, be more ſtreighten'd, and almoſt, or altogether, ſhut up.

But there are many ſacculi, ſometimes, in one bladder; and amongſt theſe even ſmall ones, which not only occupies the inferior, and middle parts, of the bladder, but the upper parts alſo: and this you will underſtand from thoſe obſervations of mine; and ſtill more clearly from two figures, which, as I have ſaid in another place, the celebrated Heiſter has added to his Latin chirurgical inſtitutions (*c*); and that with ſo much the more propriety, as it was a circumſtance greatly to be wiſh'd, that they might not be altogether omitted, by any one of thoſe who have written of Lithotomy, after frequent mention having been made of theſe ſacculi.

32. For it is of great importance to the lithotomiſt, to have them always in his eye; as by theſe he may very eaſily be deceiv'd. And if Riolanus (*d*) has taught us, that the calculi, which have their niduſſes in thoſe lower ſinuſſes of the bladder, "are not met with on the introduction of the cathe-"ter; and if the caſe deſcrib'd by the celebrated Jo. Chriſtoph. Mayo (*e*), ſhows the difficulty of taking out a calculus from thoſe ſinuſſes; it will naturally come into his mind, when conſidering a great number of ſacculi, as exiſting in different parts of the bladder, how many caſes may happen to him, in which; to omit the difficulties of the cure; he may be deceiv'd, even in the very article of ſearching for the ſtone.

And indeed from thence, as I ſee in the celebrated Schreiberus (*f*), the error has ariſen of ſuppoſing a man to be cur'd of calculi, in whoſe bladder no longer any one offer'd itſelf to the catheter; whereas in the body of the ſame man, after death, were found nine calculi, which ſix ſacculi of the bladder contain'd. But beſides the deceptions of the lithotomiſt, in ſearching for the ſtone while this is, at one time, in the bladder, and at another time withdraws itſelf into a ſacculus; which is a circumſtance whereof I ſpoke pretty ſufficiently above (*g*); it may moreover ſometimes happen, to the great detriment of the patient, and of the reputation of the lithotomiſt, that the calculus, which was very evidently perceiv'd in the bladder, ſome days before, may in vain be ſought after in the bladder now, that a ſection is made into that cavity.

(*b*) N. 30.
(*c*) Tab. 32. fig. 1 & 2.
(*d*) Loco indicat ſupra ad n. 30.
(*e*) Commerc. Litter. a. 1736. Hebd. 5. n. 2.
(*f*) Epiſt. ad Haller de Medicamento Stephens.
(*g*) N. 10.

Wherefore

Wherefore in patients of this kind, in whom a calculus is ſometimes felt by the catheter, and ſometimes not felt, he who felt it before ought to preſcribe many various kinds of motions, and poſtures, to the patient, if another lithotomiſt does not feel it at any time: and much more ought he himſelf to take care not to cut without feeling it, in the cavity of the bladder, at the very time of cutting. Theſe circumſtances however happen when the orifice of the ſacculus is pretty large in proportion to the bulk of the calculus, as it was in our ruſtic.

But the orifice and ſac both grow large, from the quantity and weight of the urine, to which the weight of the calculus muſt likewiſe be added; as this has the more matter to concrete round it, and increaſe it, in proportion to the quantity of urine that ſtagnates about it: and the more urine remains in the ſac, in proportion as the calculus is increas'd; for by this increaſe the coats that compoſe the ſacculus are more diſtracted: and their elaſtic, as well as muſcular, force, whereby the expulſion of the urine would be help'd forwards, are greatly broken, and diminiſh'd.

Wherefore the ſac may be, ſometimes, increas'd to ſuch a degree, in its magnitude, as to be miſtaken for another bladder. But I do not ſay this, becauſe I am ignorant that the bladder has been, ſometimes, really double from its original formation; as I know that it has not only been three-fold, but even five-fold.

For it is certain, that Molinetti (*b*) has publicly demonſtrated five in a woman, who was likewiſe ſupplied with as many kidnies, and ſix ureters; two of which were inſerted into the larger bladder, and the four others into the four leſſer bladders, into each one: which bladders diſcharg'd their urine into the larger bladder by peculiar tubuli; a very rare inſtance certainly, and perhaps the only one of the kind; and ſo much the more worthy to be taken notice of by me, in particular, as out of all thoſe who refer to obſervations of a double, or triple bladder, that I remember to have read, the celebrated Fantonus (*i*) is the only one by whom the leaſt mention is made, from Molinetti, of this quintuple, or five-fold bladder.

Nor does it eſcape me, that, from the firſt formation of the animal likewiſe, the cavity of the bladder is ſometimes divided into two, by a kind of ſeptum; whether that ſeptum be plac'd longitudinally, or tranſverſely: tranſverſely Ruyſch (*k*) ſaw it in ſome ſheep and calves, as Blaſius (*l*) had ſeen it in the ſame animals, and, as I ſuppoſe, in the ſame manner: although the ſecond cavity ſeems rather to belong to the dilated urachus than to the bladder; wherefore, as he himſelf hints (*m*), it is generally met with in quadrupeds only; and that which Blaſius (*n*) once found in the human body, was very ſmall: but longitudinally, as the ſame Blaſius (*o*) ſaw in another man, in whom, however, he found, by an accurate diſſection, that it was rather two bladders conglutinated into one, by the junction of their ſides, than one divided by a ſeptum.

Yet what kind of a ſeptum that was, and how ſituated, which Bauhin (*p*)

(*b*) Differt. anat. Pathol. l. 6. c. 7. in fine.
(*i*) Anat. Corp. Hum. Differt. 7.
(*k*) Cent. obſ. anat. Chir. 8. & Muſæi Theca A. Repoſ. 2. n. 1.
(*l*) Comment. in Synt. Veſling. c. 5.
(*m*) Obſ. 8. modo cit.
(*n*) Part. 4. obſ. Med. 18.
(*o*) Ibid. obſ. 19.
(*p*) Theatr. anat. l. 1. c. 31. not. *a*.

ſays

ſays was found in the body of a prince, does not appear clearly to me. This, however, appears, that what ſo many authors aſſert to have been found by Coiterus in the body of a virgin; whom I have had occaſion to ſpeak of already; none of them would have aſſerted, if they had read Coiterus a little more attentively.

For this author (*q*), without making the leaſt mention of a ſeptum, has, indeed, firſt ſaid, that in this virgin, "he had found two urinary bladders; "the one natural, and plac'd in its uſual ſituation, the other proceeding from "the neck of the matrix, on the right ſide; being almoſt twice as big as "the natural bladder, very full of urine, and like the natural bladder "furniſh'd with two coats: yet that here no meatus was ſeen, either to "bring in, or carry out the contain'd water."

But below; where he ſays it may be inquir'd, "how this preternatural blad- "der was generated, and by what paſſages the urine enter'd into this appen- "diculated bladder;" he anſwers, "it was not ſurprizing, that in this vir- "gin, who labour'd under a diſorder of the uterus, and had her menſtrual "purgations, in a diſeas'd and irregular manner, this thin and tranſparent "water ſhould be collected betwixt the membranes, which are found in great "number, in the lower belly; and that this water, by expanding theſe mem- "branes, as happens in other places, ſhould have form'd to itſelf ſuch a bladder, "or reſervoir;" ſo that it muſt be clear to every one, that he has not, in fact, deſcrib'd a ſecond urinary bladder; which had exiſted as congenial to the firſt formation of the animal; but a large hydatid, which had been, at length, generated by the force of diſeaſe.

How could it happen then, that Riolanus (*r*) ſhould aſſert, that Coiterus had found a double bladder, in that virgin, "both of them being full of "urine, but one only furniſh'd with ureters, which diſcharg'd its portion of "urine into the other?" Or even that Thomas Bartholin (*s*) ſhould ſay, "that the bladder has now and then two cavities, diſtinguiſh'd from each "other, by a membrane or ſeptum; ſuch as Volcherus Coiter found in a "girl of five and thirty years of age."

And if Tulpius (*t*) had not, ſoon after, follow'd him in repeating the ſtory of this ſuppos'd ſeptum of Coiterus; and Blaſius (*u*) likewiſe, who expreſly mentions Bartholin; the ſame miſtake would not have run through ſuch a number of other books, and thoſe even the moſt modern, which it is by no means neceſſary to particularize here: and the deſire of removing this error, has oblig'd me to be ſomewhat more full on the ſubject, than I intended. But I return to the matter in hand.

Where two or more urinary bladders, which communicate with one another, are met with, and yet, from the particular mode of ſtructure, all of them do not ſeem to have exiſted from the original formation; as, for inſtance, if into any one of them no ureter opens, nor this one ſeems, in brute animals in particular, to be made up of the dilated urachus; this bladder, I ſay; eſpecially if there is a calculus in it, or if a ſtrangury, a dyſury, or a frequent

(*q*) Obſ. anat.
(*r*) Anthropogr. l. 2. c. 28.
(*s*) In Additis ad Patris Inſtit. anat. l. 1. c. 30.
(*t*) L. 3. obſ. Med. c. 5.
(*u*) Comment. cit. in Veſling.

retention

retention of a great quantity of urine, as frequently happens in drinkers, has preceded; is not to be conſider'd as another bladder, but rather as a hernia of the natural bladder; that is a facculus produc'd by the force of diſeaſe: ſuch a one, for inſtance, as I ſuppoſe that to have been, which Bartholin aſſerts (*x*) had been ſeen in this theatre of ours, not by himſelf indeed, but by Moinichenius; being ſmall, growing to the larger, and communicating therewith.

Yet, on the other hand, I ſhall ſomewhat more readily conſider in the light of a double bladder; as one ureter, at leaſt, open'd into each cavity; that which Stegmannus (*y*) deſcribes in a young man, although labouring under a dyſuria, an iſchuria, and a calculus. And finally, before I make an end of ſpeaking of theſe facculi, I will alſo ſay, that thoſe are to be attended to, which appear before the bladder is inflated; or which, if it is already inflated, cannot be imputed to a hiatus of the external coats of the bladder, that the knife has accidentally injur'd; through which hiatus, the internal coats, being forc'd outwardly, by the air that was blown in, reſemble a facculus; which however had no exiſtence in the living body; and impoſe upon the incautious, or unexperienc'd anatomiſts: and this is a circumſtance that we have ſometimes obſerv'd to happen.

33. As to the remaining circumſtance, that the coats of the bladder were become thicken'd, as we found them in the countryman (*z*) of whom I have hitherto ſpoken; ſo you might alſo have obſerv'd them to be in that country-girl (*a*), and in the young man (*b*), each of whom had been troubled with a very violent, obſtinate, and long-continued difficulty of making water.

To theſe add the bladder, which the celebrated Dethardingius (*c*) took care to have repreſented in a plate; and even thoſe which you will ſee in Ruyſch (*d*), and which you will read, had their parietes thicken'd, from the ſame cauſe, to the extent of an inch; ſo that, in conſequence of this thickneſs, in one of them, betwixt the parietes, and a large calculus, room was left only for a few drops of urine.

And this was alſo known to Riverius (*e*), who ſays, that in carcaſes of this kind, the thickneſs of theſe parietes has been found to be "equal to that of "a finger, or thumb; ſo as ſometimes to fill the whole cavity of the bladder, "and be almoſt immediately in contact with the calculus itſelf." And not to lead you away from the Sepulchretum; although in that book (*f*) I alſo find theſe words taken from Riverius; you will even read that in a child (*g*) "they had been equal to the thickneſs of a finger's breadth;" and that, in another calculous patient (*), the bladder "had become externally fleſhy:" which circumſtance was likewiſe not unknown to Riverius, who (*h*), had remark'd the bladder to have become "a fleſhy body."

(*x*) Anat. quart. Renovat. l. 1. c 20.
(*y*) Eph. n. c. dec. 3. a. 4. obſ. 110.
(*z*) N. 28.
(*a*) N. 20.
(*b*) N. 15.
(*c*) Eph. n. c. dec. 3. a. 9. obſ. 31.
(*d*) Cent. obſ. Anat. Chir. 89. & Theſ. Anat. 2. Aſſ. 3. n. 5.
(*e*) Prax. Med. l. 14. c. 1.
(*f*) Sect. 28 hujus l. 3. obſ. 19. & ſect. 23. in ſchol. ad obſ. 1. §. 8.
(*g*) §. eod.
(*) Ibid. §. 3.
(*h*) Obſ. 19. cit

But theſe circumſtances do not happen only when the dyſuria is from a calculus. For, not to ſay, that, in reading over one of the firſt obſervations of Hoffmann, refer'd to in the preceding letter (*i*), you will alſo find it to relate to the preſent ſubject; you have, at leaſt, ſeen in the ſame letter (*k*), that when there was a dyſuria from an excreſcence of the proſtate gland, the fibres of the bladder were ſo increas'd in their thickneſs, as to reſemble the ſtrong faſciculi of the heart; when examin'd by Valſalva; both in figure and magnitude: not to take notice, here, of the obſervation of Picolhominus (*l*), which I am ſurpriz'd not to find transfer'd into the Sepulchretum; I mean that of a girl, who was afflicted with a continual fever, and very great pains, on account of an eroſion and acrimony of humours; which, having depriv'd the bladder of its internal coat, had left "the fleſhy fibres of the external ſo affected with "inflammation, that you would have ſuppos'd the whole of it to be fleſhy;" ſo far theſe fibres, ſays he, "are ſometimes inlarg'd, and render'd conſpi-"cuous."

And with this you will join the obſervation of Rud. Jac. Camerarius (*m*), of a bladder "like to a fleſhy maſs," the parietes whereof being "of the thick-"neſs of two inches, the cavity was ſcarcely larger than a nutmeg," for that reaſon: and this you will be leſs ſurpriz'd at, when, in reading the hiſtory which I refer'd to above (*n*), from the *Acta Helvetica*, you ſhall obſerve that the coats of the bladder were of ſuch an immenſe thickneſs, that, although the bladder itſelf was almoſt equal to the head of an infant, the cavity of it, nevertheleſs, was ſcarcely capable of admitting a nut.

And as I have juſt now ſaid that the fibres of theſe coats are ſometimes like the lacerti, or faſciculi, of the heart, I would not have you be ignorant that the ſame compariſon was choſen by Valſalva; and not by him only, but by other obſervers after him alſo (*o*), who have lit on the like appearances.

Nor could you yourſelf, if you happen'd to light on a bladder ſuch as the celebrated Trew (*p*) deſcribes, and gives a figure of; which, having its internal coat conſum'd, ſhow'd, inſtead of "the fibres of the muſcular coat, various "faſciculi collected together, in a ſurprizing manner, and diſtinguiſh'd "from each other, by the interceſſion of large lacunæ;" you could not, I ſay, make uſe of any other compariſon. And yet the bladder, whoſe ſubſtance was become thus thick, contain'd large and rough calculi.

But without calculi, as thoſe of which I juſt now ſpoke, it was found by Hottinger (*q*), to be as thick as the little finger, when meaſur'd tranſverſely; and to have fibres "very conſpicuous, in conſequence of their being in-"larg'd to the ſize of a pretty thick cord:" and that on account of ſo great an acrimony of urine, that it excited "a very troubleſome itching, in the "hands" of the perſon who diſſected the body: by Genſelius alſo (*r*), it was found "thick" by reaſon of ulcers, and an excreſcence in the proſtate, confining the purulent urine: and finally by Bajerus (*s*); not to add others

(*i*) N. 12.
(*k*) N. 6. vid etiam. epiſt. 40. n. 4.
(*l*) L. 2. Anat. Prælect. 24.
(*m*) Eph. n. c. cent. 3. obſ. 10.
(*n*) N. 23.
(*o*) Vid. apud Brendelium n. 2. Programm. ſupra ad n. 18. cit.
(*p*) Commerc. Litter. a. 1734. hebd. 6. n. 5.
(*q*) Eph. n. c. dec. 3. a. 9. & 10. obſ. 232.
(*r*) Eorund. cent. 6. obſ. 84.
(*s*) Eorund. Act. tom. 3. obſ. 122.

here;

here; "of the thickneſs of a man's thumb," becauſe it was internally ulcerous, and ſo irritated from hence, that, by its frequent contraction, conſtringing the mouths of the ureters, and cauſing the urine to ſtagnate therein at the ſame time, it dilated all the remaining part of them to the ſize of a man's thumb; and the *pelves* of the kidnies likewiſe, to an unuſual ſize.

And that we, alſo, have more than once ſeen a thickneſs of coats in a bladder which was not affected with any calculus, you have not only been inform'd by the laſt letter (*t*), but from others alſo (*u*). For without doubt, whether, as in perſons too much given to drinking, the urine very frequently ſolicits the bladder to diſcharge it; or any other cauſe, whatever, acts the part of a ſtimulus thereto; in ſo much the greater quantity does the blood flow to the bladder, and increaſe the thickneſs of the coats.

From other cauſes alſo, then, the coats of the bladder become thick: altho' much more frequently from a difficulty in making water. But, on the other hand, I ſuppoſe this difficulty to be increas'd by ſuch a thickneſs; and ſometimes to be produc'd, or preſerv'd, as I ſhall ſhow in a few words, after having ſubjoin'd an obſervation, which, if it could have been made perfect, would have been introduc'd in another letter, rather than in the preſent.

34. A ſailor, who was fifty years of age, of a habit inclining to fatneſs, given to drinking, and accuſtom'd to make water with difficulty; and for that reaſon, perhaps, ſubject to a ſcrotal hernia; came into this hoſpital, on account of neither of theſe diſorders; but on account of pain of the fauces, which, however, was not of ſuch a kind as to prevent him from riſing out of bed ſometimes.

Having walk'd in the morning, therefore, through the hoſpital, and ſoon after gone to bed again, he was found dead therein; his face being black, though afterwards pale. The day after, the body, being ſtill warm, was brought into the college, where I had begun to teach anatomy; it being about the end of January in the year 1733.

The belly being open'd in the manner I thought proper, the omentum was found to be drawn up above the ſtomach, and the neighbouring inteſtine colon: the liver was variegated, like a fine marble, with rediſh and whitiſh ſtreaks; and was rather large: but the ſpleen was ſtill larger in proportion, and yet not very large.

The kidnies and ureters were in a natural ſtate; yet the bladder was inlarg'd, and had its coats much thicken'd. The urethra was quite free from marks of diſorder in every part, although the corona glandis ſeem'd to have been formerly affected with little ulcers, at the termination of that and the preputium, from ſome cicatrices which remain'd. The hernial ſac was ſeen in the ſcrotum, but was empty.

The trunk of the great artery was, in ſome meaſure, tortuous where it lay upon the vertebræ of the loins; as the trunk of its iliac branch, which had a bony hardneſs in ſome places, and whitiſh ſpots internally, was alſo: but the aorta had the ſpots only.

(*t*) N. 13. (*u*) Epiſt. 4. n. 19. & epiſt. 10. n. 19.

In the thorax we found a heart very much inlarg'd. Therein the ſemilunar valves were in ſome places very hard; and the ſide of the anterior mitral was not without bone. And although from the vena cava, when cut into at the ſeptum tranſverſum, a great quantity of black and fluid blood had been diſcharg'd; yet in both the ventricles of the heart were polypous concretions, of a pretty firm compages, and of a white colour, internally, inclin'd to cineritious, of which, that on the right ſide, being the thickeſt, was produc'd far into the pulmonary artery; and the other into the aorta to no inconſiderable extent.

And the great artery; whoſe trunk ſeem'd to be univerſally wider than is natural, being diſtinguiſh'd here and there, on its internal ſurface, with whitiſh ſpots (ſuch as I have ſpoken of) from the diaphragm quite to the heart; appear'd to be the more frequently ſprinkled with theſe ſpots, the nearer it approach'd to the heart: ſo that where it is hollow'd out with the three leſſer ſinuſſes of Valſalva, it offer'd, to the view, ſpots that were much more evident, and would have been ſoon chang'd into bone.

Beſides certain parts betwixt the heart and the curvature; which part extended more than three inches in length, and two in breadth; it was, likewiſe, internally unequal with thick, and almoſt tortuous, rugæ: nor were ſlight marks of eroſion wanting. However, through the carotids the ſpots were not propagated; and much leſs the other diſorders: ſo that I was the leſs diſpleas'd to find, that, while the accurate anatomical examination of theſe parts I have ſpoken of, as well as of the others, took up the ſpace of ſome weeks, as they generally do; and while other parts were, in the intermediate time, brought in from other bodies; the head of this was buried without my knowledge: ſo that I could not inquire after the cauſe of the ſudden death therein.

The pharynx, which had been taken off, and left behind, together with the larynx, I did however examine. And the larynx, as well as the whole aſpera arteria, and the lungs, were ſound. I found the ſides of the pharynx, of which I ſaid the man had complain'd, to be thicker than natural: and by cutting into this thickneſs, I ſaw that it was owing to the ſubſtance of the pharynx itſelf; which being more diſtended, ſeem'd to reſemble ſomewhat of a middle nature, as it were, betwixt glandular and viſcid.

35. If you diligently attend to thoſe circumſtances that relate to the urinary parts, which are the only objects of our preſent conſideration; you will certainly perceive that there was nothing, to which the difficulty of making water could be imputed, but the extreme thickneſs of the coats of the bladder. That, however, which is produc'd in the Sepulchretum, from Guarinoni, and in the additamenta to this twenty-fifth ſection (*x*), has not eſcap'd my notice: for its intention is to ſhow that the thickneſs, of which we are ſpeaking, "does not always prevent the diſcharge of the urine;" as is laid down in the argument prefix'd to that obſervation.

But beſides that Guarinoni, if I rightly conceive of his opinion from a very few words, is not to be underſtood to refer to a dyſuria, but an iſchuria; which at length happens, when this thickneſs and hardneſs have come to their

(*x*) Obſ. 19.

higheſt pitch; I would alſo have you attend to this, that I do not ſuppoſe even a dyſuria to be owing to every kind of hardneſs; as, for inſtance, when this ariſes only from the ſubſtance of the fleſhy fibres being naturally enlarg'd, which renders them ſtill more proper for contraction; but from that which not only enervates theſe fibres, by the interpoſition of foreign juices, but cauſes an infarction of all the remaining coats of the bladder to ſuch a degree, as to render them leſs flexible; and, for that reaſon, makes them obſtruct the contraction of the bladder.

And indeed, if you read over, out of the obſervations which are taken notice of above (*y*), thoſe in particular, which I pointed out from Camerarius, and the *Acta Helvetica*; you will clearly perceive that thoſe very thick bladders, were either of a ſubſtance which was "fibrous" indeed, but "ſcirrhous;" or at leaſt hard and callous: ſo that notwithſtanding they were not all "every where agglutinated to the pelvis;" as that of Hottinger's was; yet they had much difficulty in contracting themſelves: from whence finally thoſe ſtrainings, and endeavours in making water.

And theſe we may ſee from the ſame cauſe, frequently, even in calculous perſons alſo; unleſs by reaſon of the weakneſs of the ſphincter, the urine ſometimes flows down ſpontaneouſly. So the bladder of the man whom Mauchartus (*z*) has deſcrib'd, was "thick and almoſt callous." Thus, in a nobleman of Piſtoia, the celebrated Targioni (*a*) ſaw the coats of the bladder an inch in thickneſs, callous, and full of ſteatomata; ſo that, as they could not be diſtended, they could contain only a very ſmall quantity of urine, betwixt themſelves and a large calculus.

And as a narrowneſs, and coarctation, of the bladder, are generally join'd with a thickneſs of the coats; as appears alſo from the example of Fantonus (*b*), taken from a man, who, after a long dyſuria, from a calculus of the bladder, appear'd, upon diſſection, to have the ureters very much enlarg'd indeed; but of the bladder itſelf, "by reaſon of the very great contraction, to "have a very ſmall capacity;" hence it is, that, if they attempt to obtain a cure, they are often ſubject to more conſiderable uneaſineſſes, and dangers.

For the neceſſary motion of the catheter, when introduc'd, being by this means prevented; either the calculi cannot be properly inquir'd after (as is ſaid by Laubius (*c*), in a man whoſe bladder was "very much conſtricted, "and thicken'd"); or if the ſurgeon make uſe of violence, the patient can by no means bear it; as we read in the work of the celebrated Schreiberus (*d*), in the caſe of another perſon, whoſe bladder, being "extremely con-"tracted, had juſt accommodated itſelf to the ſize of the contain'd calculus, "and was much incraſſated," ſo as to leave "no room" for the catheter to "turn itſelf in, when introduc'd.

And when the bladder is cut into, that may ſometimes happen, which Schrockius ſaw (*e*) even in a dead body; I mean that "the bladder being "very thick, and conſtricted about the calculus, the calculus could ſcarcely "be mov'd from that place, and extracted from the pelvis." To this add, that if the bladder "has been rendered extremely narrow, from a calculus,"

(*y*) N. 33.
(*z*) Eph. n. c. cent. 7. obſ. 15.
(*a*) Prima Raccolta di Oſſervaz. Med.
(*b*) De Obſerv. Med. & Anat. ep. 8. n. 15.
(*c*) Eph. n. c. cent. 8. obſ. 22.
(*d*) Epiſt. ſupra ad n. 32. cit.
(*e*) Eph. n. c. cent. 10. obſ. 100.

there

there is no room for the method of cure us'd by Foubert, without danger of a very conſiderable error, as the celebrated Keſſelringius *(f)* has aſſerted; and as Aug. Fred. Pallas *(g)* has very well confirm'd: even when this method is aſſiſted by a certain circumſtance.

And this he alſo obſerves of Rau's method, even with the addition of a new inſtrument *(h)*, and in the high apparatus, as they call it, he has expreſly admoniſh'd us *(i)*, that it is requiſite the bladder ſhould be "ſound "and large."

But what we have hitherto ſaid of the great diminution, for the moſt part, of the capacity of the bladder; join'd with a thickneſs of the coats, and a difficulty of extenſion; is not only of importance to the lithotomiſt to conſider, but greatly to the phyſician.

For, by way of example, if a perſon, ſubject to a dyſuria, is ſeiz'd with a ſuppreſſion of urine in the bladder; he will not eaſily ſuffer himſelf to be impos'd upon by the appearance of a ſmall tenſion of the hypogaſtrium; as a ſurgeon I have already taken notice of did *(k)*; ſo as to believe that it is not yet time to draw off the water by the catheter.

For from a ſlight, but very troubleſome tenſion, in that part, he will conjecture that there is already as much urine in the bladder, as a narrow, and but little extendible, bladder of this kind can contain; eſpecially if the patient be pretty far advanc'd in years, ſo that it may ſeem very probable for a hardneſs and rigidity, from old age, to be over and above added; and if, before the ſuppreſſion, he had been accuſtom'd to make water very often, and but little at a time. I never repented of having been induc'd, by the conſideration of theſe things, to accelerate the drawing off of the ſuppreſs'd urine in time.

36. Although this letter is already carried out to a great length, yet if we would compriſe the other diſorders, which relate to difficulty in diſcharging the urine, in the ſame letter; as I have promis'd in the beginning; we muſt, of courſe, touch upon many things in a curſory manner.

Firſt then, to the other cauſes of this difficulty, whereof I have hitherto treated, thoſe alſo muſt be added, which are to be met with in the urethra. That the proſtate gland, which comprizes the beginning of this canal, may, by being indurated, and growing out into a preternatural ſize, not only render the diſcharge of the urine difficult, but totally obſtruct it, has been ſhown in the preceding letter *(l)*.

But when, from an ulcer and confin'd pus, this gland at the ſame time grows callous, and ſwells; it may ſometimes happen, that, by the effuſion of the pus, the internal ſurface may be decreas'd in its ſubſtance, and the ſwelling ſubſide; and even that being eroded with ulcers, it may leave ſo much the more open a paſſage for the urine, becauſe a callus, in the ſame manner as the ſcirrhus of the proſtate, remark'd by the very excellent Haller *(m)*, prevents the action of the ſphincter in conſtringing the orifice of the bladder.

(f) Diſſert. de Hiſt. & Meth Foubert. n. 57.
(g) Diſſert. de variis calculi. ſecandi Methodis §. 39.
(h) Ibid. §. 29.
(i) Ibid. §. 18.
(k) Epiſt. 41. n. 14.
(l) N. 13. 14. 17. & ſeq.
(m) Opuſc. Pathol. obſ. 35.

At this time therefore, a ſtillicidium of urine will be brought on; as in the obſervation of the celebrated Fantonus (*n*), which I think may be thus explain'd. But when the caſe is at one time as I have juſt deſcrib'd, and at another time, the diſcharge of the new pus, from the proſtate, is prevented; and from hence the internal ſurface of the gland again becomes tumid, below that upper callus; ſometimes a ſtillicidium of urine will be the conſequence, and ſometimes a difficulty of diſcharging it: and this latter, frequently, will be ſo conſiderable, as to degenerate into a ſuppreſſion full of danger; which danger will be the greater, if either the inflammation, or the hardneſs, and tumour, of this gland, forbid the uſe of the catheter.

Theſe circumſtances have not only occur'd to others, and ſometimes to myſelf, in the practice of medicine; but had occur'd alſo to Valſalva, I ſee, in the caſe of a certain knight, for whom writing an opinion in the year 1714, he anſwer'd, that, if a ſuppreſſion of this kind happen to be brought on; and it is not poſſible to open the natural paſſage for the urine; what had been propos'd by others was alſo approv'd by him: I mean that they ſhould open a new paſſage, by forcing a proper inſtrument through the perinæum with dexterity.

And indeed, he moreover added, that if any thing ſhould happen to forbid the performance of this operation; neceſſity then obliging us to attempt ſomething; we might draw out the urine, by plunging in the trocar, us'd in the paracenteſis of dropſical perſons, immediately above the oſſa pubis; and paſſing it obliquely downwards to the bladder: and this I was willing to obſerve, that you might alſo know, what he thought of both theſe methods of relief; if the urine cannot be drawn out in any other manner; ſo that the life of the patient may be, in the mean while, preſerv'd, till art, or nature, ſhall open again the natural paſſage of the urine.

For as to the puncture in the hypogaſtrium; Weitbrecht (*o*) wrote to Goetzius, that it was "commended by ſome and blam'd by others," when perform'd in a certain ſoldier at Peterſburg; and that he left it to be determin'd by the ſurgeons, "whether this method deſerves blame, or praiſe and imi-"tation:" but certainly, for ten days this operation had been of much advantage, till the other parts, and, among theſe, thoſe alſo which had been the cauſe of the ſuppreſſion of urine, were likewiſe the cauſe of death; the diſſection ſhowing the diſorders of theſe parts, but not the leaſt injury of thoſe through which the inſtrument had paſs'd; and conſequently confirming the opinion of thoſe excellent authors, who had before recommended it: though perhaps, at that time, they were not ſo well known in general.

But as to the puncture in perinæo; I ſuppoſe Valſalva was not ignorant, that his college, of Bologna, furniſh'd him with an authority which he might follow; I mean Zecchius; who was formerly a very eminent phyſician, and who wrote upon the ſubject to Rota (*p*), in ſuch a manner, as to ſhow that he believ'd himſelf to be the inventor of that happy remedy.

And although Riolanus (*q*), where he commends that upper puncture, and this inferior ſection likewiſe; and this if there be neceſſity even at the ſide of

(*n*) Epiſt. ſupra ad n. 35. cit. 8. n. 18.
(*o*) Commerc. Litter. a. 1733. hebd. 2. n. 1.
(*p*) Conſult. Med. 58.
(*q*) Encheirid. anat. l. 2. c. 30.

the perinæum; in which he has his followers even now, who make uſe of the ſame inſtrument there, that they uſe in the hypogaſtrium; although, I ſay, he objects to Zecchius, that this remedy had been made uſe of "by the Pari-"ſian phyſicians, already, for a hundred years;" yet Zecchius, though he was a very young man a hundred years before, was nevertheleſs of ſuch an age, that he might have learn'd it from nature herſelf; and by nature he ſays he was "taught;" when, "an abſceſs being ruptur'd" in the perinæum, in calculous perſons, which abſceſs "had been ſpontaneouſly form'd there," he had ſeen "that all the pains, and diſagreeble ſymptoms, in making water "were remov'd."

37. That anſwer of Valſalva, of which I ſpoke juſt now, is to a ſurgeon of Lombardy, who, conſulting him in the patient's name, had alſo, among other things, inform'd him of this circumſtance; which deſerves to be taken notice of here; "that he remember'd to have found a ſtone in the proſtate "gland, when he diſſected the body of his eminence the cardinal Morigi."

For this is the diſeaſe of which Chriſtopher Pohlius treated, when he publiſh'd a diſſertation, at Leipſic, in the year 1737, *De proſtatis calculo affectis*; examining the diſeaſe with a laudable deſign certainly; from which, beſides a dyſuria, and a frequent ſtimulus to make water, other inconveniences may ariſe, and among theſe pains either in the affected part, or even in the whole urethra; in conſequence of its not being ſufficiently guarded againſt the acrimony of the urine, by reaſon of the quantity of inviſcating humour in the proſtate being much diminiſh'd, or the nature thereof vitiated.

It were to be wiſh'd that the old man (who had been a porter in his lifetime) in whom Pohlius found thoſe calculi, had had none in the kidnies; and even had had theſe parts perfectly ſound: and that there had been no conſiderable marks of inflammation; even in the lower part of the bladder itſelf, above the proſtate gland; but particularly that no tumour, ariſing from the gland itſelf, had been internally prominent about that part, to the bigneſs of a cherry; and ſimilar to a ſcirrhus, except that it abounded with pus.

That is to ſay, we are at liberty to doubt, whether all the ſigns of the diſeaſe, which Pohlius collected from the friends of the deceas'd, with great care and prudence, were the effects principally of thoſe calculi: as you might, with very good reaſon, doubt, whether ſome of the ſymptoms deſcrib'd above, by me, in Cortini (*r*), ſhould be refer'd to that tartareous, and almoſt calculous matter, which was contain'd in a certain ſinus within this gland.

And in another man; of whom mention will be made by me, on account of the peculiar and original conſtitution of the preputium and glans; when I found certain yellow, and ſmall calculi, fix'd up pretty high in the proſtate; I could not poſſibly learn, what inconveniences had been occaſion'd to him therefrom: and that by reaſon of his being a foreigner, who had been taken into this hoſpital, on account of a very acute and fatal inflammation of the thorax.

This however I perceiv'd; that there could be no emiſſion of ſemen by any means: as the calculi were ſituated, and fix'd, in ſuch a manner, as intirely to prevent its diſcharge. And this obſervation brought to mind others

(*r*) N. 13.

that

that I had read. For Marcellus Donatus (*s*) has ſaid, that a man, in whoſe proſtate he found a ſtone infix'd, "could not diſcharge ſemen, *in coitu*, ex- "cept in a very ſmall quantity, and very watery."

And Frederic Loſſius (*t*) tells us, that the cauſe of ſterility, or impotence, ſometimes is "a calculus very cloſely ſhutting up that meatus, which opens "from the proſtatæ into the urethra." And among theſe authors it ſeems proper that we ſhould reckon Nicolaus de Blegny (*u*); who relates that the ejaculation of the ſemen had been, in like manner, prevented, in another man, on account of the ſeminal caruncle being become tumid and hard; becauſe the ſemen "had been there harden'd into a ſtone, and the vaſa ejacula- "toria were full of very hard ſtones," moſt of which were of the ſhape and ſize of a pea.

And Fabricius Bartholetus, who ought to have been mention'd before, obſerv'd, according to the relation of Rhodius (*x*), that, in the proſtate, "a calculus had been generated from retain'd ſemen; and the orifice "of the bladder being compreſs'd thereby, the urine was prevented from "flowing down." But I wonder that Rhodius, and Bartholin (*y*), when taking notice of this obſervation, ſhould, contrary to the cuſtom of both of them, omit to mention that which I have, in the firſt place, pointed out from Donatus; not to ſay that I am ſurpriz'd they ſhould omit another, which is in the ſame author Donatus (*z*), "of a very ſmall ſtone," found in the proſtate of a phyſician of Mantua.

And Terraneus (*a*) even relates, that he had obſerv'd, in an old man; "who was calculous in his kidnies, his ſpleen, and his lungs; ſmall and un- "equal calculi in the tubuli of the proſtate, and in thoſe of the vaſa defe- "rentia which ejaculate the ſemen at the beginning of the urethra; which "calculi caus'd uneaſineſs, and obſtruction, both in reſpect of the urine, "which was to fall from above, and of the ſemen when about to be diſ- "charg'd."

And before him James Douglaſs (*b*) has aſſerted, that he had found, in another old man, "ſome ſmall hard bodies, ſimilar to white peas; as to "conſiſtence correſponding with the body before mention'd" (that is to ſay, with one found in the tumour of a woman, which whether it was bony, or rather ſtony, or tartareous, he left undetermin'd) "but more poliſh'd, as "to the external ſurface; ſome of which lay upon the very body of theſe "glands" (that is the proſtatæ) "while ſome adher'd, by ſmall roots, to "the membrane which cover'd theſe glands."

On theſe obſervations then, I was willing to take notice of to you here, not becauſe they are not commonly enough known; for many of them are transfer'd into the Sepulchretum (*c*), although ſome in one place, and ſome in another; but that you may add them to the obſervations of Pohlius, and ours: although from none of them, a ſufficiently peculiar ſign can be drawn, in order to diſtinguiſh calculi of the proſtate.

(*s*) De Medica Hiſt. Mirab. l. 4. c. 30.
(*t*) L. 1. Obſ. Med. 33.
(*u*) Zodiac. Med. Gall. a. 2. Mart. obſ. 4.
(*x*) Cent. 3. Obſ. Med. 27.
(*y*) Cent. 4. Epiſt. Med. 6.
(*z*) C. 30. cit.
(*a*) De Gland. c. 5.
(*b*) Vid. Act. Eradit. Lipſ. a. 1707. m. Februar.
(*c*) L. 3. ſect. 24. obſ. 17. §. 4. & ſect. 34. obſ. 5. §. 4. & obſ. 6. §. 1. & in additam obſ. 3.

For, although in moſt of thoſe which I have quoted, the ejaculation of the ſemen was prevented; yet this does not happen from every calculus of the proſtate, nor from theſe alone: for neither are all of them in ſuch a ſituation as to be able to obſtruct, or compreſs, both the ſeminal ducts, nor does the obſtruction, or compreſſion, of theſe ducts, fail to be brought on, ſometimes, by other cauſes.

But may we ſuppoſe theſe ſame calculi to be ſometimes generated, among other matters, from that alſo which we very frequently meet with, under the appearance of granules of tobacco, within, or about, this gland, when we cannot ſuſpect them to have been form'd of the ſeminal matter? You will be able to judge, of yourſelf, when I ſhall ſpeak both of that matter, and of the ſinuſſes that ſometimes contain it, and of the other diſorders of the proſtate, in treating of the gonorrhœa *(d)*.

38. In touching ſlightly, at preſent, upon ſome of the diſorders, which are alſo common to the other parts of the urethra; I ſhall by no means repeat what has been ſaid of calculi, which I have already *(e)* deſcrib'd, as found under the internal membrane of this canal, in the body of a woman.

We ſhall rather ſay, what appearances have offer'd themſelves to us, in the whole of the urethra (in ſo great a number of bodies, that we have diſſected) which may relate to the controverſy concerning the nature of caruncles; for ſo they are call'd; which almoſt every body formerly ſuppos'd to be generated therein, eſpecially if a virulent gonorrhœa had preceded; though now this opinion is embrac'd by very few; and the difficulty of making water, as well as the obſtructions the catheter meets with, and which they attributed to caruncles, have different cauſes aſſign'd for them at preſent by different perſons; and among others cicatrices in particular, or turgid and varicoſe blood veſſels, that cauſe a coarctation in ſome parts of the urethra; to which laſt kind the twenty-ſecond of thoſe obſervations, which are added to this twenty-fifth ſection of the Sepulchretum, likewiſe relates.

And even the corpus ſpongioſum urethræ itſelf, is ſaid to protuberate within the cavity of this canal in that part; where the gonorrhœa has pretty much weaken'd ſome parts of the internal coat.

And as this coat is ſo thin, you will, I apprehend, be leſs ſurpriz'd, if it does, at any time, give way to the force of the blood, which diſtends the cells of that body; as the parietes of the corpora ſpongioſa penis, which are ſo much more thick and ſtrong, are ſometimes alſo rais'd up into a knot of that kind; as was formerly hinted even by Arantius *(f)*.

The very experienc'd Goulard *(g)* thinks, that this kind of obſtruction is more frequent in the urethra, than others; the exiſtence of which however he does not deny; as it is more fitted, (which he demonſtrates) to account for the phenomena; and among theſe, this likewiſe: how it happens, that, frequently, no obſtacle occurs in the bodies of ſome perſons after death, who have complain'd of them when living, even to the very day of their death.

That is to ſay, the cauſe which had forc'd theſe cells, ceaſing in death; together with the power of the circulation of the blood; they are by degrees

(*d*) Epiſt. 44. n. 20. & ſeq.
(*e*) Epiſt. 33. n. 34.
(*f*) De Tumor. p. n. c. 50.
(*g*) Traité des Maladies de l'Urethra.

depleted,

depleted, ſubſide, and leave no traces behind, or at leaſt none, that can ſtrike the eyes of the anatomical inquirer.

Nevertheleſs, I believe that when they really did exiſt in the living body, they may be ſubjected to the eyes after death, if the ſpongy body of the urethra be diſtended by blowing-in air; in the ſame proportion as it had been diſtended in the living body by blood; and if the urethra be dried in this manner, and cut into: for then, without doubt, the place, within this canal, will come into view, where the obſtacle us'd to be perceiv'd.

However, ſome are not wanting who ſtill contend for the exiſtence of caruncles, in the ſeveral parts of the urethra; but particularly would have them allow'd of in the ſeminal caruncles itſelf, when tumid: among whom alſo was Lanciſi himſelf, in his letters to Genſelius (*h*); but no body has treated the ſubject more accurately, and at large, than Benevoli (*i*), who has taught; not only by referring to (as the former author has done) but even by producing, the whole of his own obſervations; that this diſeaſe was in that ſame exulcerated caruncle.

Yet this author has not denied; which I would wiſh to have remark'd, by one and another very learned author, conſider'd in other views; nay has even expreſsly confeſs'd (*k*), that there may be other obſtacles in the urethra beſides; ſome of which he alſo found from narrowneſſes, corrugations, and cicatrices; and even ſometimes from a kind of fleſhy excreſcence: and he contends only for this one thing, that all thoſe peculiar ſigns, by which he diſtinguiſh'd the diſeaſe whereof he was ſpeaking, from other obſtacles; which he was very well acquainted with, and which oppoſe themſelves to the urine and the catheter; could not ariſe from theſe, as they did from the ſeminal caruncle when ulcerated.

And if others take pains to ſhow that theſe may be better diſtinguiſh'd from each other, by certain marks; as he has done in regard to his; it is not to be doubted but this muſt be of great importance to the phyſician: as it is of great importance to make different predictions in different kinds of obſtacles; and at the ſame time uſe a different kind of treatment; or at leaſt to avoid improper methods.

You ſee that I, in a controverſy which is in other reſpects abſtruſe, by reaſon of the obſervations being ſo very different; reject none of theſe, in conformity to the equity of Celſus, and the judgment of the moſt excellent men. "It is to be ſuppos'd," ſays Celſus (*l*); although ſpeaking of another ſubject; "that every perſon has omitted what has not come under his know-"ledge, and that no one has pretended to ſee what he has not ſeen."

And Aſtruc (*m*), Heiſter (*n*), and Platner (*o*), to whom you may alſo add Waltherus (*p*), do not doubt but there are different kinds of obſtacles in different perſons; nor do they ſuppoſe it of importance, whether every one has

(*h*) Eph. n. c. cent. 6. obſ. 84.
(*i*) Nuova Propoſiz. int. alla Carunc,
(*k*) C. 2. & c. 3.
(*l*) De Medic. l. 7. c. 14.
(*m*) De Morb. Vener. l. 3. c. 4. §. 4. & alibi.
(*n*) Inſtit. Chir. p. 2. §. 5. c. 38. n. 1.
(*o*) Inſtit. Chir. §. 1336.
(*p*) Differt. de Collo Viril. Veſic. & cæt. §. 15. & ſeq.

ſeen all theſe kinds: for it is enough that each of them is confirm'd by obſervations upon which we may depend.

Thus we readily admit of the caruncle which Genſelius himſelf found (*q*); and not with leſs readineſs than we do of the ſtrictures, and coarctations of the urethra, ſeen by Brunnerus (*r*), and others. But I do not with equal readineſs allow of all thoſe, which each of theſe authors has added. Nor are they all of them obſervations, relating to this ſubject, but conjectures; I ſay even thoſe which are ſubjoin'd, as obſervations, by Genſelius.

For what reference to this diſeaſe, have thoſe φύμαλα of the urethra, ſpoken of by Hippocrates (*s*), or "very ſmall abſceſſes", as Celſus ſpeaks (*t*); which being ſuppurated ſoon, as generally happens, "health is reſtor'd," immediately, upon the diſcharge of the pus? Others, indeed, do relate thereto. But has not every one, who ſuppoſes himſelf to have cur'd a caruncle, at leaſt brought the ſame proof of his opinion, that Galen (*u*) produces; who having broken, with the catheter, a caruncle which "had ariſen from "an ulcer, ſaw not only ſome blood follow the excretion of the urine, but "alſo fragments of fleſh."

Thoſe who have found caruncles exiſting in the body after death, which is the moſt certain method of obſerving them, are, when all taken together, much fewer in number, than Genſelius ſeems to believe; if you ſet aſide thoſe, who, though they have ſeen fleſhy excreſcences in the urethra, yet have not ſeen them as form'd therein; which is the ſpecies we inquire after here; but have obſerv'd them to be hanging down from the bladder, from whence they aroſe, into the urethra.

And this being the ſtate of the queſtion, you will, I ſuppoſe, be leſs ſurpriz'd if I ſay, that, notwithſtanding the great number of urethras, which I have attentively examin'd, ſince the time I firſt gave myſelf to the ſtudy of anatomy; and the number I ſtill inſpect every year; I have made but one certain obſervation of a fleſhy excreſcence; whereas I have many of cicatrices, and coarctations; and this one of excreſcence was not without theſe other ſpecies of diſeaſe.

39. A young man died of a wound in the head, in this hoſpital, about the middle of December in the year 1717.

The viſcera of the belly, the great artery, and the larynx; in the examination of which parts I was then wholly taken up; being firſt accurately inſpected, and demonſtrated to thoſe who were preſent; I found theſe preternatural appearances.

The ſtomach was enlarg'd, and had ſcarcely any rugæ. The liver was bigger than it naturally is; as the hepatic artery alſo was. The kidnies had many cicatrices: but the glans penis ſtill more; as it was become very much deform'd, and very ſmall, by reaſon of large cicatrices.

From thence, the urethra was very evidently much ſtreighten'd, quite to a third part of its length: nor did any of thoſe larger canals, that I have deſcrib'd in a former work (*x*), appear any where; but their place was, in general,

(*q*) Vid. obſ. 84. cit.
(*r*) Eph. n. c. cent. 1. obſ. 71. & 97.
(*s*) Sect. 4. aph. 82.
(*t*) L. 2. c. 8.
(*u*) De Loc. Aff. l. 1. c. 1.
(*x*) Adverſ. I. n. 10.

taken

taken up by an interrupted line, which a thin excreſcence of luxuriant fleſh compos'd.

The other part of the canal; being cut open, quite to the bladder, and examin'd very attentively; ſhow'd no mark of diſeaſe: as the larynx did not in like manner; if you except the epiglottis, which was not quite ſound. But the great artery was internally unequal, and had marks of beginning oſſification, and corroſion; though ſomewhat obſcure: beſides, a little above the heart, it was become much wider than is natural.

40. I diſſected the carcaſe of an old man; who was a foreigner, in the ſame place, and almoſt about the ſame time; the other of whoſe diſorders I have not remark'd in my papers. That he had been infected with the venereal diſeaſe, as well as the young man of whom I ſpoke juſt now, the appearances, which I ſhall give you an account of, will ſufficiently demonſtrate.

For when the belly was open'd, and I had found one of the kidnies very large, the other more contracted than natural, and the ureter of this laſt almoſt univerſally dilated; to ſuch a degree, as to admit the point of my little finger; and beſides theſe, the bladder large, having its parietes thicken'd, and purulent; I turn'd my eyes to the urethra, and the penis. The glans penis was hollow'd out with many deep cicatriſes: and the urethra was very much contracted, ſo that I was ſcarcely able to demonſtrate, therein, one of thoſe ſmall canals, which are ſpoken of above.

The other parts did not ſeem to be preternaturally affected; except that the epiglottis was not perfectly ſound, and the neareſt part of the tongue, which is cover'd with glands, was here and there diſfigur'd with little ulcers.

41. As to the appearances which I obſerv'd in the urethra of both theſe perſons; though it was eaſy to perceive from what cauſe they had ariſen, yet it was not in our power to know what effects they had produc'd: that is, what inconveniences they had occaſion'd in making water; as it likewiſe happen'd in regard to other appearances, which, being found by me in other urethras, by diſſection, I have either given you the deſcription of already, or ſhall give hereafter.

For I ſhall tell you *(y)*, when I treat of the gonorrhœa *(z)*, that, in a young man who died of a wound in the neck, I had met with an oblong whitiſh line, a little protuberant, going obliquely from the middle of the urethra, towards the farther part of that canal; as I alſo met with ſome other little chords in an aſthmatic man *(a)*, not without a contraction of the urethra.

And I ſaid in the fortieth letter *(b)*, that in an old man, who had been taken off by the rupture of an aneuriſm, I found the urethra cicatriz'd in ſeveral places; and fibres, beſides, obliquely prominent, betwixt the ſeminal caruncle, and the bladder: and in like manner in the fourth letter *(c)*, that in the ſtable-keeper, who died apoplectic, I met with oblong whitiſh lines, obliquely prominent, in two places of the urethra; and in one, at leaſt, oppoſ-

(y) Vid. etiam epiſt. 63. n. 13.
(z) Epiſt. 44. n. 7.
(a) Ibid. n. 10.
(b) N. 29.
(c) N. 19.

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ing themſelves to the probe when introduc'd: and finally, in the tenth letter I have ſaid (*d*), that in the body of a paralytic man, who had been taken off by convulſions, I likewiſe found certain oblique, and almoſt fleſhy, fibrillæ, in that part of the urethra, where ſome obſtacle uſed to lie in the way of the catheter.

Now if with that line, which I ſaid, juſt now (*e*), was made up of a thin excreſcence of luxuriant fleſh, you compare theſe almoſt fleſhy fibrillæ, and thoſe fibres; and with both of theſe, in like manner, compare the oblique and prominent lines; you will perhaps ſuſpect, with me, that a kind of thin excreſcences do now and then ſucceed to ſome certain eroſions of the urethra, which excreſcences, when contracted, firſt reſemble fibres, or fleſhy fibrillæ; but when more and more dried, do, at length, put on the appearance of whitiſh and ſomewhat prominent lines: and therefore it muſt have happen'd to me, to have ſeen excreſcences of this kind frequently, if I could have inſpected theſe urethras, while the diſorder was more recent. Yet, on the other hand, it is not abſurd, to ſuppoſe, that as I have more than once ſeen the urethra cicatriz'd, and very manifeſtly ſtreighten'd; ſo theſe lines may be, in ſome meaſure, the conſequence of thoſe appearances.

42. I have frequently diſſected, and accurately examin'd, the urethras of women alſo; though not ſo frequently as thoſe of men. But hitherto I have not lit on any one (unleſs you would perhaps except one, whereof I ſhall ſpeak preſently) which had cicatrices, and much leſs excreſcences: nor is it to be wonder'd at, in a very ſhort, and not very narrow canal, into which neither ſo many humours, that have the power of eroding, are diſcharg'd, nor does any flexure happen therein, and ſtill leſs ſo much as is obſerv'd in the male urethra. Yet that in the female urethra, both ulcers and excreſcence, or at leaſt ſome long-continu'd obſtacles, may ariſe, I have learn'd from Aſtruc and Alghiſi; the former of whom (*f*) has more than once ſeen the body, with which the female urethra is ſurrounded, ſuppurated, and fiſtulous, opening within the urethra, and diſcharging pus; and, at other times, that the urethra was immoderately ſtreighten'd by the ſame tumid and callous body; and Alghiſi (*g*) mentions a virgin, in whom a thin medicated candle, that had been left within the urethra; in order to deſtroy "a carnoſity" of that canal; had enter'd into the bladder.

Add to theſe the "fleſhy excreſcence," which will be ſpoken of preſently, deſcrib'd in a certain widow, by Mullerus (*h*).

And it happen'd once to me, when I examin'd the body of an old woman, about the beginning of the year 1751, that I met with a ſmall triangular excreſcence, within the external orifice of the urethra, yet not protuberant therefrom: and very often, but particularly after acute fevers, I have obſerv'd ſanguiferous veſſels; which being in great number, and almoſt parallel, creep through the internal coat of the urethra; and theſe ſo turgid, and crowded together, that almoſt the whole of this canal was black therefrom: and it happen'd once in a young virgin, and, in like manner, in an old woman, of whom I ſhall perhaps have occaſion to ſpeak hereafter (*i*),

(*d*) N. 13.
(*e*) N. 39.
(*f*) §. 4. ſupra ad n. 38. cit.
(*g*) Litotom. c. 3.
(*h*) Eph. n. c. cent. 8. obſ. 38.
(*i*) Vid. epiſt. 50. n. 51. & epiſt. 56. n. 21.

that

that I ſaw a portion of this ſame coat prolaps'd on the outſide of the orifice of this meatus.

But what inconvenience theſe laſt-mention'd females, or the former, ſuffer'd in the diſcharge of their urine, I could conjecture indeed, but not for a certainty know.

In regard to the cauſe likewiſe, why ſome part of that membrane was ſo prominent, from the orifice of the urethra; in the two laſt ſpoken of; we were only at liberty to conjecture it.

And as I was not willing to make uſe of that conjecture, which might have been drawn from this orifice, and that membrane, having been frequently irritated by the head of a needle (*k*), or bodkin; another perhaps remain'd to be drawn from a foregoing ſtrangury.

For that this membrane is urg'd downwards, by very violent ſtrainings to expel the urine, is not only hinted by reaſon, but confirm'd by the obſervation of Mullerus, that I have already quoted. For the excreſcence, which, coming forth out of the orifice of the urethra, had ſtop'd it up, being in great meaſure conſum'd; the remaining internal part became "conſpicuous "only by that kind of ſtraining, which we uſe in unloading the bladder."

Which obſervation of an excreſcence, that was "fleſhy, red, and fun-"gous; and had come forth to the ſize of a bean," from that orifice; if it be join'd, by you, with another inſtance, which the celebrated Goulardus (*l*) mentions, of a "carnoſity in the urethra" of a certain man, which grew out to ſuch a degree at ſome times, that it came forth from the orifice thereof, and was there to be taken off; you will ſo much the more readily join in opinion with thoſe, who ſtill acknowledge caruncles, among the other obſtacles, that occur in the meatus urinarius.

But not to depart from the conſideration of the female urethra; what ſhall we ſay of that very rare obſervation of Corn. Solingen, which Salzmannus (*m*) takes notice of; I mean "of the meatus urinarius being inverted, and hang-"ing downwards, to the length of a little finger?"

Shall we ſay that the membrane of the meatus was relax'd, and extended, to ſuch a degree? Or that the neck, or lower part, of the bladder, was fallen down thither, as Salzmannus (*n*) ſeems to believe? Who nevertheleſs propoſes the following doubt (*o*): "if ſome other part, which offer'd itſelf "to the eyes, did really not impoſe upon Solingen, under the appearance of "the bladder."

There is alſo another diſeaſe, to ſhow the rarity of which in the female urethra, I ſhall hint at a few things concerning this canal; and calculi diſcharg'd thereby. The urethra of females, as Celſus (*p*) ſays, and, as I juſt now laid down, "is both ſhorter, and more lax, than in males;" and, as he had ſaid above (*q*), is, at the ſame time, more direct in its paſſage."

A calculus therefore, as the ſame author very properly ſubjoins, "when "it is very ſmall, frequently falls out of itſelf." And ſometimes ſtones, that are by no means ſmall, are ſpontaneouſly extruded this way; of which

(*k*) Supra n. 19. & ſeq.
(*l*) Tract. ſupra ad n. 38. cit.
(*m*) Diſſert. de Hern. Veſic. Urin. theſ. 18.
(*n*) Theſ. 26.
(*o*) Theſ. 19.
(*p*) De Medic. l. 7. c. 26. n4.
(*q*) Eod. c. n. 1.

kind was that I ſaw here, as I have already written (*r*); and ſtill more thoſe that I ſaw at Bologna. Of which, or others; that Langelottus (*s*), Jægerſchmidius (*t*), Dillenius (*u*), Schmiederus (*x*), Trew (*y*), and others, have ſpoken of, as being extruded from the female urethra, without the aſſiſtance of ſurgery; it is of no importance to ſay more: ſince it is certain that Sennertus (*z*), and Tulpius (*a*), have ſeen larger than thoſe; that is, the former one "almoſt of the bigneſs of a hen's egg," and the latter one, as the figure "which is added ſhows, very thick, and weighing three ounces, and two "drachms."

And this I believe to have been the largeſt, among all of which I remember to have read: I ſay among all, not only that have been diſcharg'd by women, but even generated in their bladders; whereas I know, that, in the male bladder, they have grown to an immenſe weight.

For I omit that which "weigh'd an Engliſh pound, and two drachms be-"ſides, the like to which" Van Helmont "did not remember ever to have "ſeen;" ſince in the ſame ſection of the Sepulchretum (*b*), wherein thoſe words are related, calculi of thirty-two (*c*), and thirty-four ounces, in weight, are deſcrib'd (*d*): and the celebrated Targioni (*e*) aſſerts, that there is one at Florence, which weighs thirty-nine ounces; and this is, likewiſe, the more remarkable, becauſe it was found in a man, who was carried off by a diſeaſe; after a healthy and flouriſhing old age; in which there were ſlight ſuſpicions of a calculous diſorder, rather than any real or true ſymptoms.

And I ſee that another of the ſame weight is taken notice of by Verducius (*f*), and from Launayus (*g*) another of fifty-one ounces: finally, that your wonder may be carried quite to its height, conſider that which Keſſelringius (*h*) ſays he had ſeen in the poſſeſſion of the celebrated Morand, "equal "in weight to ſix pounds and three ounces:" which very weight; leſt you ſhould ſuſpect me of having made a miſtake in the deſcription; you will alſo find in the reviewal of that diſſertation, publiſh'd in the *Commercium Litterarium* (*i*).

But from what cauſe do you ſuppoſe it to happen, that we read of no ſuch large ſtones being found in the female bladder? Doubtleſs, I either am deceiv'd, or the more direct, and ſhorter paſſage, of the urine in the female ſex, as I have already ſaid, and particularly the wider paſſage, eaſily receives and emits the much greater part of that viſcid, and tartareous matter; which, by reaſon of contrary cauſes, ſtagnates in the bladder of the males, and is continually added to the matter already concreted into a calculus; whereby its bulk is greatly increas'd: and this happens particularly in ſome bodies, who are moſt diſpos'd thereto.

(*r*) N. 10.
(*s*) Eph. n. c. dec. 1. a. 6 & 7. obſ. 7.
(*t*) Dec. 3. a. 3. obſ. 101.
(*u*) Dec. ead. a. 9 & 10. obſ. 242.
(*x*) Cent. 3 & 4. obſ. 161.
(*y*) Commerc. Litter. a. 1733. hebd. 39. n. 4.
(*z*) Med. practt. l. 3. p. 8. ſ. 1. c. 2. verſ. fin.
(*a*) Obſ. Med. l. 3. c. 7.
(*b*) 23. obſ. 1. §. 9.
(*c*) Obſ. ead. §. 1.
(*d*) Ibid. §. 2.
(*e*) Prima Raccolta di Oſſervaz. Med.
(*f*) Vid. apud Boretium de operat. alti adparat.
(*g*) Vid apud Pall. diſſert. ſupra ad n. 35. cit. in adnot. ad §. 19.
(*h*) Diſſert. ibid. ſupra cit. n. 53.
(*i*) A. 1739. hebd. 9.

For which reaſon we ought to conſider as the more extraordinary, the caſe publiſh'd by the celebrated Adolphus (*k*), " of an oblong calculus form'd in " the urethra " of an old woman, " and firmly adhering thereto."

For by what means could the particles, of which this calculus conſiſted, remain in a canal of that kind, and not be carried away by the impetus of the urine?

Certainly, either the impelling force, by which the urine is driven, was grown very languid, in a woman of threeſcore and ſixteen years of age, or the membrane of the urethra was, in ſome places, ulcerous; and for that reaſon retain'd thoſe particles within its winding ſinuſſes, and inequalities: or, finally, the calculus which was firſt generated in the bladder, and had, in ſome part, enter'd into the urethra, having been obſtructed there, had freſh and freſh additions continually made to it, of the ſame kind of particles flowing that way gently, and almoſt drop by drop, as is generally the caſe; theſe things, I ſay, either all, or ſome, might be ſufficient to produce that which is the object of our ſurprize, though the production is nevertheleſs very extraordinary.

And what favours this explication, beſides the age of the woman, is the preceding " obſtruction of urine, for many years, at times at leaſt; but " particularly the calculus itſelf bent back quite into the bladder. For ſee my firſt obſervation (*l*), of the calculus which had been form'd upon a needle, within the bladder of the virgin.

This calculus, as it had a part of itſelf bent back within the meatus urinarius, certainly had not begun from that part; but on the needle, which was at ſome diſtance from thence: and this very part had been gradually form'd, within the contiguous meatus, as an appendix and additamentum of the calculus; ſo that it was evidently to be conſider'd as the end, and not the beginning, of the calculus.

43. It would remain now, that I ſhould write of the Diabetes, of the incontinence of urine, of its excretion through an indecent place, and of urines that are not in their natural ſtate; each of which ſubjects has a peculiar ſection allotted to it in the Sepulchretum.

However, I ſhall not do this for two reaſons. The firſt is, that neither Valſalva, nor I, have diſſected any one who died of a diabetes; as you may, of yourſelf, eaſily conjecture, from what I hinted of this diſeaſe, in the former letter (*m*). The ſecond is, becauſe I have already deſcrib'd all the appearances I have met with, in thoſe who died after the other diſorders, which are juſt now ſpoken of; and that at the ſame time I treated of different diſeaſes, on which they depended: as you may have obſerv'd even in this very letter. And it is not our cuſtom to repeat any thing.

But if this were not done in the Sepulchretum, thoſe ſections, that I have ſpoken of, would be reduc'd ſo as to contain much leſs; notwithſtanding the two firſt are ſo ſhort, that both of them, together with the Scholia, ſcarcely fill ſix pages. Beſides, in almoſt every one which relates to the urine, or the parts ſubſervient thereto, not only the obſervations which had been

(*k*) Act. n. c. tom. 1. obſ. 239. (*m*) N. 14. 15.
(*l*) Supra ad n. 19.

given in other ſections, are repeated, but they are ſet down twice even in the ſame ſection.

You have learn'd already, from the beginning of the preceding letter (*n*), how many were repeated in the twenty-fourth ſection. See then, I beſeech you, whether in the twenty-third ſection, which precedes that, the things whereof we read in the firſt article of the eighth obſervation, are not the ſame that we read partly in the ninth obſervation, and partly in the Scholia which are ſubjoin'd to it: and in the ſection, on the ſubject of which I am ſtill employ'd, that is the twenty-fifth, whether what had been given under article the ſecond, and tenth, of the eighth obſervation, are not ſet down again under article the nineteenth, and article the ſeventeenth, of the ſame obſervation.

But even in one of thoſe very ſhort ſections, that is in the twenty-ſeventh, is not what is ſaid under article the third of the firſt obſervation, the ſame that is ſaid under article the ninth of the ſecond? And in this very ſecond obſervation, is not article the fourth the ſame with article the eleventh which follows? If you are inclin'd to doubt it, only examine the hiſtories, as they are related at large, in the twenty-fourth ſection, obſervation the tenth, article the eighth, and obſervation the ſecond, article the fourth; on reading of which all your doubts will be remov'd.

Finally; not to take up your time with too many ſtrictures; if you turn over the twenty-ſeventh ſection, you will find, not without great ſurprize, that the very ſame things which have been ſaid a little above, are twice repeated below, in one and the ſame page; that is to ſay, firſt the greateſt part of the Scholia to the ſixth and ſeventh obſervations; and after that, under the twelfth obſervation, the hiſtory of the illuſtrious dutcheſs, article the ſecond and fourth.

44. Yet, leſt we ſhould ſeem to paſs by theſe ſections, without taking any notice of them, I will remark a few things, in regard to that laſt, which relates to urine in a preternatural ſtate; and not much more, in regard to the laſt but one; which I have ſaid relates to the excretion of urine through an indecent place. For both theſe kinds of remarks may not be without their utility; though they will have no diſſection join'd with them.

I have ſometimes lit on urine which ſeem'd to have chyle mix'd with it, and ſometimes on that which ſeem'd to have blood; ſo that ſome phyſicians contended that the circumſtance was to be conſider'd juſt as it appear'd; but others that it was to be underſtood very differently.

That firſt controverſy was agitated here about forty years ago, to a very great degree; when the laſt of the noble family of the Diſcalcis; in that long diſeaſe of which he at length died; continu'd to diſcharge urine, for a long time, the greater part of which ſeem'd to be perfectly like milk.

One of his phyſicians; a very eminent man, who was join'd with me in the office of profeſſorſhip in the college, and was my intimate friend; having obſerv'd that ſediment to be quite free from ſmell and viſcidity, aſſerted it to be chyle. The other denied this, and contended for its being pus.

In order to ſettle this long and obſtinate diſpute, every one, at Padua,

(*n*) Epiſt. 41. n. 1.

who had then any name in phyſic, was ſent for, at different times. As there is nothing that I chooſe more to avoid than to be engag'd in controverſy, I had long evaded it, by many and divers excuſes: but I was, at length, perſuaded to give my opinion, by the patient's wife's brother, Alexander Guarini, in whom that ancient family, made illuſtrious by the eminent poet of his name, likewiſe became extinct, after ſome years.

When I had heard the reaſonings of the contending parties, had examin'd the urine, and had diligently examin'd the patient; I anſwer'd in ſuch a manner, as to ſhow to every body, that I did not ſet light by either of the diſputants; but gave to each his merits: yet as I ow'd more to the love of truth than to friendſhip, I was under a neceſſity of inclining to the ſecond opinion.

For that chyle might, indeed, be diſcharg'd by the kidnies, I ſaid I was not ignorant; provided the ſecretory paſſages, through theſe viſcera, are very lax (and we muſt of courſe explain ſome of thoſe examples which are pointed out even in this twenty-ſeventh ſection of the Sepulchretum (*o*) in this manner.)

However, in our patient, from the ſymptoms of an injury in one kidney; which had long preceded (and theſe pretty conſiderable) and even then attended the diſcharge; it ſeem'd that pus could not be excluded, though a part of the chyle may join itſelf thereto. Nor did it eſcape me, how fœtid a pus is, ſometimes, diſcharg'd from diſeas'd kidnies; yet there are examples of pus without any ſmell, not only from other parts; as when Celſus has ſaid (*p*) "that pus is beſt when it has no ſmell;" but even from the kidnies themſelves, and for that reaſon to be taken notice of juſt now.

For as to the ſediment not being viſcid, that very viſcid ſubſtances are ſometimes found in the kidnies alſo (as in the ſame ſection of the Sepulchretum (*q*)). Nevertheleſs that all pus was not viſcid; and the pus which is diſcharg'd with the urine, in a glutinous and thin ſtate, I have read that the moſt experienc'd phyſicians (*r*), attribute to the bladder, and not to the kidnies: and that Valſalva alſo, taught by diſſection, had been accuſtom'd to deduce this much more ſeldom from the kidnies, than from the parts beneath.

And though we ſhould pay no regard to theſe arguments, yet I could not forget either that man, or the biſhop, whoſe hiſtories; that have been left us by Benedictus Silvaticus (*s*) and Lælius a Fonte (*t*); are as ſimilar to ours, as we can ſuppoſe (ſo that, for this reaſon, I could ſcarcely believe, that theſe hiſtories, in a controverſy ſo warmly agitated, had been taken notice of by no body, before me; as I was afterwards certainly inform'd.

For in both of theſe patients, ſigns of a diſeaſe in one kidney had preceded; and even had been attended, as in ours, with a ſlow fever, and a waſting of fleſh. By both of theſe patients urine was diſcharg'd, the ſediment of which was not fœtid, nor viſcid, but inodorous and fluid; and much like milk. That this was pus flowing down from the kidnies, both of theſe phyſicians affirm'd. Others denied it; and particularly in the caſe of the biſhop.

(*o*) Schol. 2. ad obſ. 14.
(*p*) De Medic. l. 5. c. 20. n. 20.
(*q*) Obſ. 9. §. 1. & obſ. 22. §. 1.
(*r*) Vid. ibid. Schol. ad obſ. 10 & 15.
(*s*) (*t*) Vid. ibid. cit. obſ. 10. cum Schol. & obſ. 14. cum Schol.

But the diſſections which ſhow'd the ſubſtance of his kidney to be conſum'd, or perforated, by an abſceſs, ſtood as a teſtimony of the caſe. From theſe things; though I ſaid them more like a perſon who was making remarks, than like one who pronounc'd upon a diſeaſe; although I inculcated the difficulty of judgment in determining the hidden ſeats and nature of diſeaſes; and though I did not profeſs to be more learned and ſagacious than the many others, who had been conſulted on the former days; yet it was no ſecret to any one of the noble and learned men, who were preſent in great number, to which ſide my opinion was inclin'd.

Nor was the diſſection of the body refus'd, ſoon after, when the patient died; by which; although it was perform'd, almoſt clandeſtinely, by a ſurgeon of no note or eminence; it was pretty well known, nevertheleſs, afterwards, in ſpite of this caution, that the kidney, of the affected ſide, was found to be half putrid, and reduc'd to a very ſmall bulk.

And although this report was confirm'd by the ſilence of thoſe, to whoſe credit it was to have it believ'd otherwiſe; yet as neither I, nor any one of my friends, was preſent at the diſſection, I did not think proper to lay it down here as certain.

45. This controverſy was at Padua. But at Venice there was formerly another controverſy, in which fewer perſons were concern'd: the diſpute was whether the urine of a certain abbot had blood really mix'd with it, as it ſeem'd to have, or not. The affair was almoſt like that which is deſcrib'd in the ſame twenty-eighth ſection of the Sepulchretum *(u)*; for the blood did not ſubſide in the urine, even after being long kept.

When I was conſulted, I perſuaded them to make the experiment by applying fire; for by this means the blood might eaſily coaleſce, and ſhow itſelf, if it was really therein. Wherefore, by making this experiment, the controverſy was at once put an end to.

However, in what manner the celebrated Burgmann *(x)* made the ſame inquiry, by immerſing a white linen rag into the urine of this kind; and what Schelhamer *(y)* found inſtead of blood, and by what means he found it; and how in ſome perſons blood is to be accounted for, from the hæmorrhoids of the bladder, according to Cælius Aurelianus *(z)*; although I gave an anſwer, at large, upon this ſubject, to the celebrated Serao, who conſulted me for a noble Neapolitan patient, in regard to whoſe caſe there was a great diſſention of phyſicians; yet I will not take up your time now in diſcuſſing theſe things: but will rather exhort you to examine the authors I have commended; and to read the very learned Helwichius (*) upon the ſubject of theſe hæmorrhoids.

But when you ſhall read, in the ſame ſection I juſt now pointed out (**), that round, vermiform, and bloody bodies had been diſcharg'd, together with the urine, by a certain widow who ſuffer'd a moſt excruciating pain in the loins; you will require a more accurate examination of their ſubſtance, by which it might appear that they were polypous concretions, thus form'd in the ureter,

(*u*) Obſ. 9.
(*x*) Commerc. Litter. a. 1733. hebd. 36.
(*y*) Eph. n. c. dec. 3. a. 9. obſ. 81.
(*z*) Morbor. Chron. l. 5. c. 4.
(*) Eph. n. c. tom. modo cit. obſ. 119.
(**) Obſ. 26.

rather

rather than round particles of the kidney, which had been corroded by a cancer.

For that they were not true worms even the author of the obſervation has acknowledged: which certainly cannot be diſcharg'd together with the urine, unleſs a paſſage be open'd betwixt the bladder, or the urethra, and the inteſtines; as I have already ſhown above (*a*).

Wherefore, when you come to the thirtieth obſervation of the ſame ſection, in which it is ſaid that grapes, pieces of lettice, and other kinds of food, were diſcharg'd together with the urine; you will partly wiſh for a greater caution, and a more accurate examination: and, as in one, the whole bladder is ſaid to have been ulcerated, you will alſo partly ſuſpect, that an ulcer had reach'd from thence into ſome one, or other, of the inteſtines.

For it might eaſily happen, that a bladder, in this ſtate, ſhould coaleſce with one of the neareſt inteſtines; and that thus a winding ſinus might be form'd, by means of a kind of ulcerous corroſion, from the one to the other. And in this manner, we may perhaps conceive how the man of whom Young (*b*) writes, diſcharg'd, together with a fœculent urine, very ſmall grapes, and particles of leaves, and roots, and other things which he had eaten; and with theſe two pills drawn out into a conſiderable length.

It is certain that very ſevere colic pains had preceded in the former months; ſo as to make it not altogether improbable, that ſome inflam'd inteſtine had coaleſc'd with the bladder, and a ſmall abſceſs being made, that pus had been diſcharg'd into the cavity of both theſe viſcera, by which a fiſtula of communication might have been left open betwixt them.

For as to the urine having no diſagreeable ſmell, when Young was call'd to the patient; and as to neither blood, nor pus, being diſcharg'd in the ſtools; as to there being no teneſmus; and as to the unctuous fluid, given in the form of a glyſter, not having ting'd the urine with its colour; it is true that theſe circumſtances might, with good reaſon, render it leſs ſuppoſable, with him, that there was a communication betwixt the bladder and the rectum, or betwixt the bladder and the colon.

Yet he would, perhaps, have thought it more probable, if he had conceiv'd of this communication, betwixt the bladder, and ſome part of the inteſtine ileum, contiguous thereto: for thoſe very ſevere pains which had preceded, although they were call'd *Colic*, might poſſibly have been *Iliac*.

46. But a preternatural foramen; which goes from the bladder to the contiguous inteſtinum rectum; as it renders the explication of urine diſcharg'd by the anus very obvious; ſo it is ſometimes either ſo obſcure in dead bodies, or ſo difficult to be believ'd in the living, that it is but juſt poſſible, and indeed ſcarcely at all poſſible, to explain this caſe, (which relates, as you ſee, to the laſt but one of the ſections enumerated (*c*)) in the ſame manner, with any degree of probability.

All theſe things that I ſay I ſhall illuſtrate by examples. The moſt ancient of which is from Praxagoras, who relates, "that he ſaw a certain man, who "had excreted his urine per anum, and had ſurviv'd twelve years: but whe-

(*a*) N. 6 & 29.
(*b*) Vid. apud Th. Dereham Saggio delle Tranſaz. tom. 3. p. 2. c. 4. §. 29.
(*c*) Supra n. 43.

"ther

" ther more years or not (as he himſelf had at that time departed, and had " not heard any thing of him afterwards) he was quite uninform'd."

This paſſage I have copied from the little book of Ruffus Epheſius, *de Veſicæ Renumque Affectibus (d)*, in the ſame manner as we read it in the edition of Henricus Stephanus, of *Medicæ Artis Principes*; which little book Linden, and Mercklin *(e)*, do not ſeem to have obſerv'd to be extant in a Latin tranſlation.

And theſe things I was willing you ſhould know, leſt you ſhould, perhaps, wonder why I have not ſaid, as Schenck *(f)*, and thoſe who copy him, have done, that Praxagoras had ſeen a certain perſon " in whom the urine " was diſcharg'd per anum for twelve years together."

Yet if he had really aſſerted this, as expreſsly as he has ſaid that the man ſurvived twelve years, there would be no great cauſe for wonder; ſince even in this twenty-ſeventh ſection *(g)*, we have the hiſtory of a man, who, from his childhood to his fortieth, and even quite to his fiftieth year, " always" diſcharg'd his urine by the anus: for a lithotomiſt, having cut out a calculus from him, when a boy, had ſo far injur'd the bladder and inteſtinum rectum, that after death a paſſage was found to go down from the bladder, into this inteſtine, " of the width of an inch."

And what the unſkilfulneſs of the operator had given riſe to in this man, ſeems in the man obſerv'd by Praxagoras, to have been the effect of diſeaſe; for, after thoſe things, Ruffus ſubjoins his obſervation, that " ſometimes an " abſceſs burſts into the inteſtine;" although, to diſſemble nothing, he ſpeaks of an abſceſs of the kidnies: but you know that Pechlinus *(h)*, when urine was excreted from the inteſtines, five or ſix times every day; in a man labouring under an iſchuria of the kidnies, and a calculus of the bladder; left it quite undetermin'd, whether this urine " was brought, from the bladder, " by new, and tubulated paſſages, into the inteſtinum rectum, which lies " immediately under it; or from the kidnies to the inteſtines."

However, Fernelius *(i)* ſpeaks of an abſceſs of the bladder, and of the inteſtinum rectum; when he ſays that this abſceſs has been " ſometimes ſeen " to penetrate, even to the anus; and the urine to flow out that way." And Hildanus *(k)*; when, after a long iſchuria of the bladder, and purulent urines, he had at length ſeen this fluid, on the laſt twenty days of the patient's life, no more diſcharg'd by the penis, but by the anus; " at one time " by itſelf, and at another time mix'd with excrements;" found that a ſmall, and round, ulcer was carried, from the cavity of the bladder, into the inteſtinum rectum.

Wherefore, when Horſtius had related to him, that a woman; who, in falling from a tree, had got a laceration of the genital parts, and imprudently heal'd up the external wound ſoon after, " had now diſcharg'd no urine for more than " the ſpace of a fortnight," except that " a ſerous humidity flow'd every day " from the inteſtines, not together with the inteſtinal excrements, but ſepa-

(*d*) C. 8.
(*e*) Linden. Renov. vide Ruffus.
(*f*) Obſ. Med. l. 3. ubi de Urina alien. loc. excreta, obſ. 13.
(*g*) Obſ. 1.
(*h*) Vid. Act. Erud. Lipſ. a. 1691. M. Maj.
(*i*) Pathol. l. 6. c. 13.
(*k*) Cent. 2. obſ. 65.

" rately;

" rately ;" he made no doubt to pronounce (*l*), " that he was firmly perſuad-
" ed, not only that the neck of the bladder, and uterus, but even the in-
" teſtinum rectum itſelf, had been injur'd, and perforated, by the tree.

And thus far, indeed, the explication is eaſy and clear ; as it had alſo been in a nobleman, if the blood which he diſcharg'd from his inteſtines, had not, without doubt, conceal'd the urine that was mix'd therewith : for in him the celebrated Moraſchius (*m*) found a calculus of the bladder, adhering to a fungous fleſh, which calculus had, at length, perforated the bladder, together with the inteſtinum rectum.

But, on the contrary, there are obſervations, in regard to which you may heſitate ; as that, for inſtance, which is pointed out from the *Acta Helvetica* (*n*), more than once, above ; though with a different view. For although, to a diſcharge of bloody urine, and a dyſuria, this ſymptom of making water per anum was added, a little before the end of life ; yet the bladder ſhow'd no ulcer, and no paſſage which led to the inteſtine.

Add to this, an obſervation from the Sepulchretum (*o*), of a much longer time. For a boy ; in whom, " through the whole ſpace of ten years, the " urine was intirely ſuppreſs'd, ſome drops of which, though not very lim-
" pid, came forth per anum ;" had his kidnies, and ureters, render'd uſeleſs, by the force of diſeaſe : but the bladder " not at all preternaturally per-
" forated."

And indeed, where there was a great quantity of urine in the bladder (as in him of whom Rhodius (*p*) ſpeaks) being ſuppreſs'd by a caruncle of the urethra ; this urine " flow'd, in its clear ſtate, through the inteſtinum rec-
" tum :" but only " till, the obſtruction being removed, nature return'd
" to her uſual paſſage ;" ſo that we do not at all conceive, how it had quite ceas'd to flow by the inteſtine, if a paſſage were really open'd in a preternatural manner, from the bladder to that inteſtine.

There was, likewiſe, a great quantity of urine, in the bladder of a child, whom many take notice of from the obſervation of Benivenius (*q*) ; for he had diſcharg'd none for ſeven days ; when he at length evacuated it by the anus. But leſt you ſhould ſuppoſe, that ſome remaining mark of preternatural perforation, might poſſibly be overlook'd by Rhodius, and by Benivenius ; read over the obſervation of the celebrated Reuſnerus (*r*), on another child.

You will, at leaſt, ſee that there was no urine in the bladder, which could make its way, by force, from thence into the inteſtine : and yet that, on the ſeventh day of the iſchuria renalis, " urine, which was ſimilar to what is na-
" turally excreted, in colour, ſmell, and quantity, was diſcharg'd from the
" inteſtines, without any diſcharge of the inteſtinal fæces at the ſame time ;
" without any pain, or alteration :" and that three or four times a day, for ſome days together ; till all of a ſudden it was again diſcharg'd by the penis, " without the leaſt pain, or troubleſome ſymptom :" and that in this manner the urine continued to be evacuated, in the following years.

(*l*) Cent. 5. obſ. 47.
(*m*) Eph. n. c. cent. 10. obſ. 56.
(*n*) Tom. 1.
(*o*) Sect. 24. obſ. 6. §. 1.
(*p*) Cent. 2. obſ. Med. 90.
(*q*) De abdit. morb. cauſis c. 7.
(*r*) Eph. n. c. cent. 5. obſ. 3.

We

We are not at liberty, therefore, to explain every excretion of urine per anum, in that firſt manner; but where on account of a renal, or veſical iſchuria, the blood is overloaded with the urinous particles; and there is no ſign of any morbid paſſage being open'd from the kidnies or from the bladder, to the inteſtine; the caſe is rather to be explain'd in the following manner: I mean that as the urine may be thrown up by vomiting; which I have already ſaid (*s*); ſo it alſo may be diſcharg'd from the inteſtines, in conſequence of the inteſtinal glands preternaturally ſecreting it.

Nevertheleſs, even taking this method for granted, we do not eaſily conceive, how the urine, when effus'd into the inteſtinal tube, ſhould be excreted without any mixture of the inteſtinal fæces, as I juſt now related: which difficulty is not even wholly remov'd, by ſuppoſing that method, firſt ſpoken of; as when the woman, mention'd by Horſtius, did not emit the urine from the anus, together with the inteſtinal excrements, but "ſeparately;" for Hildanus had obſerv'd, in his old man, that the urine ſometimes flow'd "ſe-"parately, and at other times in conjunction with the fæces."

I happen'd, ſome years ago, to light on a caſe, in endeavouring to underſtand which; its cauſe, and the manner wherein this cauſe operated; that difficulty, which I juſt now propos'd, ſeem'd no more to be one of the moſt conſiderable.

A young prieſt, who, at his death, by reaſon of his excellent natural diſpoſition, his probity worthy of his office, and his manners which were always exemplary, left all his acquaintance inconſolable for his loſs; having related to me, that he had obſerv'd, a few days before, his urine to be diſcharg'd per anum; I, who knew him to be hypochondriac, as many are who are given to the ſtudy of letters, at firſt did not believe him: but, the day following, when he had taken care that the urine, which had been juſt before diſcharg'd in this manner, ſhould be brought to me, I then at length very cloſely inquir'd of him, whether he had been ever affected with any diſorder of the urinary parts, or of the lower inteſtine, with any pain, or uneaſineſs whatever? And if not long before, yet, at leaſt, whether he had been troubled with any inconveniences in making water, or going to ſtool, at any time lately? Or was at that time troubled with any? Whether any thing bloody, or purulent, had been diſcharg'd by either paſſage? Or was now diſcharg'd? And other things of the like kind.

But he anſwer'd each of theſe queſtions in the negative: ſo that of courſe he denied them all; and that in ſuch terms, as would have gain'd credit to a leſs ingenuous man than him.

There had been none here, as you ſee, of the cauſes which I juſt now took notice of; no exſection of a calculus, no abſceſs, no fall, no blow, no calculus of the kidnies or bladder, no ſuppreſſion of urine in the one or the other; and yet the urine was diſcharg'd, very often, every day, from the bladder, and the anus, at the ſame time; and this very fluid, which generally flow'd, from the inteſtine, without any of the excrements being mix'd with it, continued to flow from thence even to the day of his death, which was brought on by quite a different diſeaſe; that is, continued to flow for many months, without the leaſt pain or uneaſineſs to him.

(*s*) Epiſt. 41. n. 5.

When this young gentleman died, it happen'd that I was at a diſtance, in the place of my nativity; ſo that it was not poſſible for me even to aſk for the liberty of inſpecting his body, and, perhaps, have the opportunity of learning from the dead body, what I could not ſufficiently underſtand in the living. But thus far at preſent. The next letter you may expect to be ſomewhat ſhorter: in the mean while, farewell.

LETTER the FORTY-THIRD

Treats of Hernias.

HERNIAS, of which I am now about to treat, are divided by the moſt learned men at this time (as you very well know) into the legitimate and ſpurious; legitimate they call thoſe in which ſome viſcus of the belly is prolaps'd, and the others ſpurious. I ſhall follow this order. Of thoſe hernias, therefore, the obſervations of which ſtill remain in the papers of Valſalva, theſe belong to the claſs of legitimates.

2. A man of thirty years of age, dying of a wound in his head, and having ſeem'd, when living, to have three teſticles, the ſcrotum and inguina were, for this reaſon, diſſected: and therein we had the following appearances.

The teſtes were only two in number: and theſe were in their natural ſtate. But that which ſeem'd to be the third, and lay on the left ſide, was a portion of the omentum; which had deſcended into the ſcrotum, wrap'd up in its proper ſacculus, made up of the peritonæum. On the right ſide alſo was a tumour, but of a leſs ſize: and this was made up by the appendicula vermiformis prolaps'd into a ſimilar ſac.

3. We have, here, an example of an epiplocele, and enterocele, at the ſame time; and ſomething peculiar in both. The portion of the omentum, which, in the living body, had reſembled a teſticle, muſt be added to the other inſtances, which may impoſe upon us in like manner; and which formerly created a ſuſpicion in me (*a*); in reading ſuch a number of obſervations of three teſticles, taken notice of by De Graaf (*b*), and others; that there was ſome deception in many of thoſe which were not confirm'd, by diſſection, after death.

(*a*) Adverſ. 4. Animad. 1. (*b*) De Viror. Organ. generat. inſervientib.

And indeed, this man would certainly have increas'd their number, if the miſtake had not been corrected by diſſection; as it was corrected in another, whoſe third teſticle, as it ſeem'd to be, was nothing elſe, in fact, but an hydatid of the bigneſs of the true teſticle, and very ſimilar to it in figure; as is aſſerted by the celebrated Schreiberus (*c*).

However, a portion of the omentum found in the ſcrotum, would formerly have excited admiration, in thoſe whom the celebrated Heiſter (*d*) points out, and confutes, by his obſervation of a double epiplocele being found in one man, and in the ſame part.

But if the appendicula vermiformis had fallen down into the ſcrotum, together with the inteſtinum cæcum, or even with the neighbouring part of the colon; although I know that this does not fall down ſo eaſily as the left part of the colon; yet if the ligaments of the colon, on the right ſide, being relax'd, or broken through, as in the obſervation of Waltherus (*e*), the appendicula had deſcended together with this, and the cæcum, into the ſcrotum; the weight of theſe parts forcing the peritonæum downwards; it would be more eaſy to conceive how that could happen, than how this appendicle alone, which is ſo flexible and light, ſhould have come thither: unleſs it was, perhaps, at that time greatly diſtended, which it ſeldom is, with excrements; or rather, unleſs it had enter'd into a ſacculus form'd by the inteſtinum ileum, after the return of that inteſtine into the cavity of the belly; its length being of great aſſiſtance thereto.

This difficulty was acknowledg'd by Lavaterus (*f*), who, however, did not ſee this appendicle in the ſcrotum, though he ſaw the inteſtine colon therein, and on the right ſide too, "to the bigneſs of more than a man's "fiſt:" and this I have ſaid happens with more difficulty than on the left ſide; unleſs the hernia ſhould be the conſequence of a violent blow, or a fall from a high place: an example of which kind you have in Tacconus (*g*).

But Mauchartus (*h*) affirms, "that a part of the colon, and even the whole arch of this inteſtine, ſometimes falls down into the ſcrotum;" on the left ſide; where he ſays he had ſeen it three times on that ſide; and "that "a hernia of the colon was found," on the ſame ſide, by a celebrated ſurgeon of Paris, "where the cæcum, together with its vermiform appendix, had fallen directly into the ſcrotum."

And even the celebrated Henſingius (*i*), likewiſe, ſaw an oſcheocele, on the left ſide, "which contain'd eight ells of the ſmall inteſtines, the inteſtine "cæcum with the vermiform proceſs, and half an ell of the inteſtine colon."

And theſe things I take notice of, that you may know how far the ligaments, of the colon, may be relax'd, in large hernias; ſo as to ſuffer this inteſtine to follow the ſmall ones, when dragging downwards by their weight; and even the appendicula itſelf to be prolaps'd, into the left part of the ſcrotum, though together with the cæcum.

(*c*) Nov. Comment. Acad. Sc. Imp. Petropol. tom. 3. inter phyſica obſ. 6. & tab. 12. fig. 2.
(*d*) Eph. n. c. cent. 5. obſ. 85.
(*e*) Act. Erud. Lipſ. a. 1738. M. Jun.
(*f*) Differt. de Inteſtinor. compreſ. theſ. 5.
(*g*) Differt. de raris Herniis quibuſdam.
(*h*) Differt. de Hern. incarcer. c. 2.
(*i*) Differt. de Periton. ad §. 8.

But

But we ſhall have an opportunity below (*k*), likewiſe, to ſpeak of large enteroceles. At preſent, as I have already deſcrib'd to you obſervations, both of the epiplocele, and enterocele, in other places, from Valſalva; I ſhall ſubjoin, here, the two of this laſt kind that remain; though they were but ſmall.

4. A poor man, of ſixty years of age, of a very bad habit, and afflicted with a rupture, being expos'd to the cold air, and perhaps his ſtrength failing him, fell down; broke the os humeri in the middle, and ſlightly bruis'd his face. Not long after this he died.

The belly being open'd; if you except the vaſa lactea turgid with chyle, that aroſe from a large tract of the inteſtines, without the interpoſition of any lymphæducts, which were ſeen in other places through the meſentery; and other appearances of the ſame kind (which we reſerve to another place) nothing occur'd that was worthy of admiration; beſides a part of the inteſtines, which, having fallen down from the belly, into a ſacculus form'd of the peritonæum, was buried in the uſual way in the ſcrotum.

When the left cavity of the thorax was laid open, the lungs immediately colaps'd upon the entrance of the external air; juſt as they do in living animals: but this could not be obſerv'd on the right ſide. However both lobes of the lungs were ſound.

In the brain was contain'd a little water; and in ſome places a gelatinous concretion was obſerv'd.

The muſcular parts of this carcaſe were ſoft and flaccid: the blood was almoſt ſerous; and had very little of its red part. But what red it had ſhow'd ſome ſolid bodies ſwimming in the ſerum: yet in it were no fibres; for when this blood was thrown into water, there appear'd no fibrous concretion.

5. Another poor man, of about five and thirty years of age, being in like manner expos'd to the injuries of the cold, was brought into the hoſpital, on the evening of January the fifth, in the year 1690, when he was already without pulſe. He complain'd, with a faultering voice, of a violent pain in his belly: and as this was ſuppos'd to be from the prolapſus of the inteſtines into the ſcrotum, to which he was ſubject, they endeavour'd to replace them. In the morning the man died.

While the body was cut open, the fleſhy parts diſcharg'd a great quantity of fluid.

In the belly, every thing was natural; except that a part of the inteſtines was even prolaps'd on the right ſide: the peritonæum being relax'd in the groin and expanded, within the ſcrotum, into an oblong ſac, with a very narrow orifice.

When the thorax was laid open, the lungs appear'd to be variegated with black ſpots, and black blood; and on the poſterior part, where they adher'd by membranes to the ribs, were in ſome meaſure inflam'd. In the right ventricle of the heart was a pretty large, and in the left a ſmall polypous concretion, together with grumous blood.

But as to lymphatic veſſels being obvious throughout the ſurface of this heart, and of almoſt all the remaining viſcera; how diſtended they were in

(*k*) N. 7.

the meſentery, and repreſented a ſeries of globules, as it were; and other things of the like kind; I ſhall have a more convenient opportunity of ſpeaking on theſe ſubjects hereafter.

6. If you aſk the reaſon, why I did not give you theſe two obſervations of Valſalva in other places, rather than here; I ſhall ſay, I have not given them in other places, becauſe the laſt ſymptoms of the former patient are not put down; and the diſſection of the head of the latter. And I have copied them here; to ſhow you that the viſcera, which Valſalva had ſeen to be prolaps'd, did not fall down through a rupture of the peritonæum, but through a relaxation of this membrane; nor within a proceſs of it; but within a ſaeculus made up of this membrane relax'd.

Nor has he above *(l)*, nor in five other obſervations, made by him, upon hernias, which I have formerly deſcrib'd to you *(m)*, laid down any thing repugnant thereto; but has even, ſometimes, ſaid what agreed perfectly therewith. And if you read, over again, eleven other obſervations already given by me *(n)*, you will find nothing repugnant to this doctrine; but a confirmation of it.

Nor will you be ſurpriz'd, when you attend, not ſo much to that perſuaſion which had formerly poſſeſs'd the minds of moſt perſons, as to the obſervations of thoſe, who, ſetting aſide this perſuaſion, choſe rather to be determin'd by accurate inſpections.

Thus Arantius *(o)*, even in very large ruptures, ſaw "no ſolution of continuity in the peritonæum." Thus, in that ſection of the Sepulchretum, which relates to the preſent ſubject, that is in the twenty-ninth; in which I find nothing ſaid of Arantius; you will read that Hildanus *(p)*, Riolanus *(q)*, Barbette *(r)*, to whom you may add Ruyſch *(s)*, and Benevoli *(t)*, confirm the ſame thing.

And, indeed, though this laſt author had occaſion to inveſtigate theſe things more than a hundred times, and Ruyſch not leſs often; yet both of them aſſert that the peritonæum had *never* been ruptur'd in hernias. But you will ſay Arantius does not deny the poſſibility of its being ruptur'd; and Barbette, if you read him a little below *(u)*, ſpeaks in ſuch a manner, as to lead us to ſuppoſe that he had ſeen it ruptur'd, in that kind of hernia which they now call crural.

Yet he does not expreſly ſay that he had ſeen it. And others, beſides thoſe I have mention'd, deny their having ever ſeen it; particularly Mauchartus *(x)*, who affirms that in five bodies which had herniæ, he found the peritonæum "only dilated; though the bodies were very cautiouſly diſſected by "him for this purpoſe; that he had never found it ruptur'd, and even that "it had certainly never happen'd to the celebrated Pariſian ſurgeons, whom "he had conſulted upon this rupture; notwithſtanding they have a very "ample and frequent opportunity of inquiring into ruptures."

(l) N. 2.
(m) Epiſt. II. n. 20. V. n. 2. XXXIV. n. 7. & 5. XXXVIII. n. 2.
(n) Ep. V. n. 19. XXI. n. 15 & 19. XXIV. n. 16. XXVI. n. 37. XXXIV. n. 9. 11. 15. & 18. XLI. n. 10. XLII. n. 34.
(o) De Tumor. c. 48.
(p) (q) Schol. ad obſ. 19. verſ. fin.
(r) Obſ. 1.
(s) Adverſ. Anat. dec. 2. n. 9.
(t) Diſſertaz. 1.
(u) Chirurg. p. 1. c. 7.
(x) Diſſert. ſupra ad n. 3. cit. c. 2.

And

And leſt you ſhould be in doubt, whether he conſulted them only in regard to ſmall herniæ, and not of large likewiſe; he had, a little before, mention'd letters ſent to him from one of them, in which he ſays that he had juſt then found three ells of the ſmall inteſtines, together with a portion of the colon, in an "enormous" rupture.

And if you ſtill require larger; Henſingius, beſides that which is mention'd above, will give you another (*y*), containing eight ells of the inteſtines and more, which he receiv'd from the celebrated Hommelius (*z*); who, in an infant of two years old, ſaw "all the chylopoietic viſcera" to have fallen out from the navel: "the peritonæum not being ruptur'd, but only extended and relax'd;" as Henſingius had alſo ſeen in his obſervation.

And before them Mery (*a*), in the left ſide of the ſcrotum, of a certain old man, which was enlarg'd to a monſtrous ſize, found the cæcum, together with the beginning of the colon, drag'd down thither by the ſmall inteſtines, which were all of them prolaps'd in that place; except the upper part to the length of half a foot, by which the ſtomach was likewiſe ſo drawn down, from its ſituation, as to deſcend, in a right line, from the diaphragm towards the lower parts of the belly: yet a purſe or ſac, made of the peritonæum, cloſely embrac'd all this very large tumour.

Nor would I have you ſay that Mery, when he before (*b*) gave us the obſervation of that not ſmall hernia; from a virgin; which, beſides two circumvolutions of the inteſtine colon, contain'd a tract of the ſmall inteſtines to the length of four feet at leaſt, and had this ſingularity; on account of which it is ſurprizing, that it ſhould be ſcarcely taken notice of, by any of the authors, who have written of ruptures ſince that time; I mean that it extended from the left groin, quite to the middle of the thigh; do not ſay then, that Mery, in giving this obſervation, has not made the leaſt mention of a containing peritonæum.

For it is natural to anſwer, that, in a hernia, the involucra of which, as well as the ſmall inteſtines contain'd therein, had been putrefied by a gangrene, there was no opportunity for the ſurgeon to examine, whether the peritonæum had comprehended theſe parts; as this membrane muſt have been already deſtroy'd by that putrefaction, rather than ruptur'd.

And ſuppoſe the ſame thing to be ſaid, in reſpect to the obſervation of Tacconus (*c*) on another virgin; in whom, not below the ligamentum Poupartii, as it is call'd, but from the ſame place as in the former, the inteſtines having been prolaps'd for many years, at length fell down ſuddenly without the hernia: not ſo much becauſe the peritonæum, that lay in contact with them, was ruptur'd, as half-corrupted; and moſt probably, from the ſame cauſe, that had ulcerated the lower integuments of the hernia.

For you will ſee, that, in a much larger rupture, ſpoken of by the ſame author, whatever part of the colon and meſocolon was therein, as the delineated figure clearly ſhows (*d*), "had been inveſted round about" by the

(*y*) N. 3.
(*z*) Ad §. ibid. cit.
(*a*) Mem. de l'Acad. R. des Sc. a. 1701. obſ. 5.
(*b*) Ibid. obſ. 4.
(*c*) Diſſert. ſupra ad n. 3. cit.
(*d*) Tab. 3. fig. 1.

peritonæum.

peritonæum. Other large hernias I have both read of, and ſeen: as that which Teichmeyrus (*e*) repreſented as hanging down "quite to the knees;" and thoſe which Schacherus (*f*), and Meekrenius (*g*), have ſaid were "extended beyond the knees;" and not to be too prolix, that which the celebrated Brebiſius (*h*) has repreſented, as "hanging down quite to the calves of the legs."

But the firſt has only ſaid (*i*), that a large portion of the ſmall inteſtines, of the large inteſtines, of the meſentery, and omentum, had been contain'd therein: whether the ſecond diſſected his hernia, I do not know: the two others cretainly did not; nor did I diſſect that which I ſaw in a biſhop of a noble family; I mean an oſcheocele alone, which was unequal in length, indeed, to that repreſented by Meekrenius, but not in thickneſs; nor in this, that the viſcera, which it contain'd, could very eaſily be forc'd back into the belly: but they could be retain'd there by no means whatever.

7. Is there no obſervation then, you will ſay, of the peritonæum being ruptur'd in herniæ? I do not contend for this; but only that they are much more rare than was formerly ſuppos'd. And although Dionis (*k*) aſſerts; that an omphalocele happens only if the peritonæum be ruptur'd; and that he, although he had open'd many omphaloceles, both in the living, and dead body, could never diſcover that they were inveſted internally by the peritonæum; and even that by cutting into the ſkin, he had found no membrane beſides; yet you have ſeen juſt now (*l*), how large an omphalocele Hommelius ſaw comprehended in the relax'd, not ruptur'd, peritonæum: and you may ſee, that Paul Barbette (*m*) had ſometimes demonſtrated, in dead bodies, that although the navel, together with the ſubſequent inteſtines, protuberated ſo as to equal the ſize of a man's head, the peritonæum was nevertheleſs "expanded only, and not ruptur'd;" and, in like manner, that Hottinger (*n*); in the omphalocele of a woman, which was a foot in its diameter, or more; having taken off the ſkin, "open'd the peritonæum, "which in thickneſs, and denſity, reſembled the external ſkin, and was "difficult to be cut through; having the inteſtines firmly annex'd to it," as, in a girl diſſected by Schulzius (*o*), it had the omentum connected to it, in moſt places.

To theſe add the obſervation of the illuſtrious Haller (*p*), who found the peritonæal ſac whole in the exomphalos, as well as in other herniæ. In conſequence of theſe obſervations you will perhaps ſuſpect, that, in ſome of the diſſections of Dionis, at leaſt, his eyes had been deceiv'd, by the great extenuation of the peritonæum, and its cloſe connexion with the common integuments.

I alſo read, that, in a crural hernia, a man of eminence (*q*) found a portion

(*e*) Diſſert. de Exomphalo inflamm. §. 11.
(*f*) Diſſert. de Morb. a ſitu. inteſt. p. n. c. 3. §. 3.
(*g*) Obſ. Med. Chir. Poſth. c. 5.
(*h*) Act. n. c. tom. 4. obſ. 25.
(*i*) Diſſert. cit. §. 18.
(*k*) Cours d'Operat. de Chir. demonſtr. 2.
(*l*) N. 6.
(*m*) Sect. hac Sepulchr. 29. & obſ. 1.
(*n*) Eph. n. c. dec. 3. a. 9. & 10. obſ. 231.
(*o*) Act. n. c. tom. 1. obſ. 226.
(*p*) Opuſc. Pathol. obſ. 29. & ſeq.
(*q*) Commerc. Litter. a. 1745. hebd. 24. n. 1.

of

of the omentum, colon, and ileum, " in a cavity of the ruptur'd perito-
" næum."

Verheyen (*r*) nevertheleſs; who was one of the firſt that deſcrib'd this kind of hernia, and the manner in which patients die from an interception of it; has aſſerted, that it was made by the peritonæum being " gradually dilated " in that part; or, what very rarely happens, by the peritonæum being " ruptur'd:" and I myſelf, as I have already told you (*s*), have certainly ſeen the ſacculus of it in that part; as others have likewiſe; and among theſe Mauchartus (*t*); and if you require a larger ſac, Wernerus, as you read in the ſame Mauchartus (*u*); who dilated a ſac in the ſame part, which contain'd, beſide a long portion of the omentum, a part of the inteſtinum ileum, " almoſt of the length of two feet and a half."

But if we are to conſider the oſcheocele chiefly, which is not only the more frequent hernia, but gave me occaſion to enter into this diſcuſſion; we muſt not diſſemble, that, in the very ſection of the Sepulchretum (*x*), which treats of this ſubject, two obſervations are extant; the one of John Rudolph Salzmann (*y*), the other of Frederic Hoffmann the father (*z*); the former of whom ſays, that, in this hernia, he had demonſtrated " the peritonæum " to be ruptur'd;" and the latter, that he had ſeen, " with a dilatation of " the external coat of the peritonæum, the internal ruptur'd, and lace-
" rated."

It may be wiſh'd, in regard to theſe obſervations; which if they are compar'd with the others, that are almoſt innumerable; are very rare; that what had been the cauſe of the hernia in both of them, was not unknown to us. For to open myſelf to you ingenuouſly, as my cuſtom is, I am, in ſome meaſure, a follower of our Fabricius (*a*), and even of Paulus Eginetta (*b*), whoſe ſectary he is.

That is to ſay, I follow them in this doctrine which they have taught us; that the rupture, whereof we are ſpeaking, is brought about, either by a dilatation, relaxation, or rupture of the peritonæum; and in this likewiſe; that when it happens from a rupture, " the inteſtine is ſuddenly, and at once, " puſh'd down in the beginning; and that from violent cauſes only: and " there is a very large tumour;" or, as others tranſlate the words of Paulus; " it is of an immenſe magnitude."

Yet in this I cannot follow them, that a rupture is always to be acknowledg'd, even where all theſe ſigns have come together.

For my aſſent to this doctrine is witheld, not only by the obſervations before advanc'd, of large ruptures, and thoſe which violent cauſes (ſuch as a fall from a high place, or the like) had produc'd, or increas'd, without a rupture of the peritonæum; but alſo by reaſon; which, as Mauchartus (*c*) ſhows, by no means forbids us to ſuppoſe what cauſes there might be, either from the original formation, or afterwards, of ſo great a propenſity to dila-

(*r*) Anat. corp. hum. l. 1. tr. 2. c. 7.
(*s*) Epiſt. 34. n. 15.
(*t*) Diſſert. ſupra ad n. 3. cit. c. 4. in fin.
(*u*) Diſſert. de Epiplo-Enterocele Crurali.
(*x*) 29. l. 3.
(*y*) Obſ. 3.
(*z*) Obſ. 14. §. 3.
(*a*) Pentateuch. l. 1. c. 24. & de Chirurg. Operat. ubi de Inteſt. Hernia.
(*b*) De Re Medica l. 6. c. 65.
(*c*) Diſſert. ſupra ad n. 3. cit. c. 2.

tation, in this membrane; that the circumſtance, to which there was a previous diſpoſition long before, might ſeem to be brought about of a ſudden.

And this being the ſtate of the matter; I commend Fabricius ſo much the more; for aſſerting that this membrane (*d*) "was either dilated, or ruptur'd: "but that, for the moſt part, it was dilated;" the more I perceive there may be room for his aſſertion: not only when herniæ are form'd "gradually and "ſlowly," as he ſuppos'd; but even when they are form'd of a ſudden.

Yet if you now produce the obſervation of Saltzmann (*e*), on the ſtable-keeper, who labour'd under a bubonocele before, and in whom, by the kick of a horſe in his belly, "the whole bulk of the inteſtines fell down into the "ſcrotum in one moment as it were;" ſo that this part ſeem'd almoſt like another belly in magnitude (the abdomen being, in the mean time, extremely collaps'd) and confirm it by another obſervation which he takes notice of from Petit; who, in a ſimilar caſe, which happen'd from the ſame cauſe, found the peritonæal ſac open'd; I ſhall without difficulty allow, that, in both of the examples, the peritonæum had been ruptur'd: nor did I ever perſuade myſelf that this membrane had ſo much ſtrength, and firmneſs, as not to allow of its being broken through by blows of this kind, or other violent cauſes; which, for that reaſon, I was willing to ſuppoſe had been applied, in thoſe two obſervations of Saltzmann, and Hoffmann, which I ſaid are extant in the Sepulchretum.

I do not, however, ſuppoſe this to happen from every cauſe that is call'd violent, nor at all times; and I even ſuppoſe it to happen but ſeldom. Among theſe cauſes, for inſtance, I ſee that riding on horſeback is now reckon'd by many: nor do I deny, if it be too frequently us'd, that it may cauſe, and increaſe, herniæ, from an extenſion of the peritonæum; as I bear in mind the example of Marcus Servilius, of whom Livy (*f*) relates, that while he was haranguing the people; and ſhowing the ſcars of wounds, which he had receiv'd in the forepart of his body, in the cauſe of his country; "the "parts, which ſhould have been conceal'd, being accidentally uncover'd, a "tumour of the groin had rais'd a laugh in thoſe who ſtood near him;" and that he then went on to ſay, "and this tumour alſo, which is the object of "your laughter, I have got by ſitting, night and day, on horſeback: nor am "I more aſham'd, or ſorry, for this tumour, than I am for theſe ſcars; ſince "it was never any impediment to me, in the adminiſtration of the common-"wealth, either at home or abroad."

And he had been conſul, and maſter of the horſe, and had fought three and twenty times with the enemy, in pitch'd battles. His rupture therefore, whether it was a bubonocele, or; as the Latins made uſe of the word *inguina*; an oſcheocele; that is, whether it was an inguinal, or a ſcrotal hernia; it was not, I ſay, one of theſe large ones, which are accounted for from a rupture of the peritonæum: for it muſt, on this ſuppoſition, have been a hindrance to him, in performing thoſe offices which he had perform'd; as beſides that one, whom I took notice of above (*g*), from Meekrenius, I have

(*d*) De Operat. loco indicato.
(*e*) Differt. de Hern. Velic. theſ. 21.
(*f*) Hiſt. l. 45.
(*g*) N. 6.

read

read of no perſon, whoſe alertneſs of action was not, for the moſt part, much obſtructed by an obſtacle and burden of this nature.

Riding for a long time together therefore; and that at the fulleſt ſpeed the horſe can be rous'd to by ſpurring; if repeated very frequently, may, I believe, be ſometimes capable of rupturing the peritonæum: and at the ſame time, I cannot help ſuppoſing, that every exertion of the body, in leaping, or dancing; that every fall from a high place; that every blow; that every ſtrong exertion of the voice; finally, that every ſtraining, and holding of the breath; which may relax the peritonæum; is not equal to the taſk of breaking through this membrane.

And thus far of this controverſy. Now let us go on to the hernial ſacculus itſelf.

8. It was formerly believ'd that the hernial ſacculus was the proceſs of the peritonæum dilated; I mean that proceſs which they ſuppos'd to receive the ſpermatic veſſels, from the cavity of the abdomen; and, after having accompanied them, to expand itſelf, at length, into the tunica vaginalis: and this they continued to believe even after Fernelius (*b*) had ſo clearly ſhown that the peritonæum was not perforated for the egreſs of theſe veſſels.

But truth was at length ſuperior to error, by the conſent and diligence of more accurate diſſecters: with whom you will plainly perceive Valſalva's obſervations, upon herniæ, and mine, to agree; by reading over again thoſe which are deſcrib'd pretty much at large.

For ſee in the thirty-fourth letter (*i*), how expreſly he denies the ſacculus to be made up of the proceſs of the peritonæum, which accompanies the ſpermatic veſſels; as they formerly believ'd: and he even ſays that it lay upon this proceſs, at the ſuperior part.

Wherefore, in the firſt of the three obſervations, which I have deſcrib'd to you above (*k*); when he ſays that the omentum was contain'd within its "*proper*" ſac, made up of the peritonæum, without doubt he made uſe of this word *proper*, that we might immediately diſtinguiſh it from that proceſs, which was alſo common to the veſſels.

And I have often plac'd the matter in ſo clear a light, as to make an interpretation needleſs. Thus in the fifth letter (*l*), I have ſaid that the ſacculus was very near to the vagina, or ſheath, of the ſpermatic veſſels; of whatever nature this vagina may be ſuppos'd.

Thus I have ſaid in the twenty-firſt letter (*m*), that the ſacculus was in the beginning, and progreſs, of it, on the internal ſide of theſe veſſels; betwixt the membrane that covers theſe veſſels, and that coat which is join'd to the cremaſter muſcle. Thus in the twenty-fourth letter, I have ſaid (*n*), that the ſacculus deſcended under this very coat, and on the ſame internal ſide of the veſſels; and that near the orifice of this ſac, theſe veſſels went to, not the cavity of the belly, but the peritonæum: but in another (*o*) you will find that it was near to the external ſide of theſe veſſels.

(*b*) Phyſiol. l. 1. c. 7.
(*i*) N. 5.
(*k*) N. 2.
(*l*) N. 19.
(*m*) N. 15.
(*n*) N. 9.
(*o*) N. 18.

There are, indeed, ſome differences, betwixt my obſervations, and thoſe of others, and even thoſe of Valſalva himſelf. For he, as I have ſaid, ſaw the ſacculus lying upon the veſſels, in a dead body, on the ſuperior part; that is, if you ſuppoſe the body erect, at the anterior part; which ſome very learned men ſay to be "perpetually" obſerv'd.

But I have met with it, ſometimes, on the internal, and ſometimes on the external, ſide of thoſe veſſels. And there is one perſon, if I rightly conceive, who has ſeen the cremaſter muſcle lying betwixt the ſacculus, and the veſſels; which I ſuppoſe to be much more rare: at leaſt I have found it otherwiſe, as I have already ſaid.

Theſe differences of ſituation, however, although very neceſſary for ſurgeons to attend to; do not, by any means, prevent me from agreeing with Valſalva, and both of us with the moſt accurate obſervers; in that which is its principal circumſtance: I mean that the hernial ſacculus is one thing, and the proceſs of the peritonæum another: although, at this time, there is no ſmall controverſy amongſt anatomiſts, in regard to acknowledging this proceſs.

For as to Fernelius denying that it was made up of the internal coat of the peritonæum, and aſſerting it to conſiſt, at leaſt, of the other external coat; how can they admit of this ſuppoſition, who do not acknowledge any ſuch external coat? In which number however, I do not ſufficiently know, why this learned man ſeems to place Swammerdam, from his notes on the Prodromus Hornii; Ruyſch from the ninety-eighth obſervation; and Juſtus Schraderus from the fifth obſervation of the ſecond Decuria.

But they who, in fact, conſider the cellular membrane as forming this coat; as they do not deny that this at leaſt deſcends into the ſcrotum with the ſpermatic veſſels, grant us enough, in the mean time, to ſet aſide the controverſy, and, at leaſt, to mark out this involucrum, in which theſe veſſels are contain'd, and which proceeds from the peritonæum, under the term vagina, in reſpect of theſe veſſels, and under the term proceſs, in reſpect to the peritonæum.

Nor was Valſalva himſelf, in my opinion, very diſtant from an explication of this kind; when he us'd the expreſſion proceſs of the peritonæum (*p*). For although he did not always teach me the ſame thing, upon this ſubject, when I was a young man; yet I very well remember, when he, finally, deliver'd himſelf thus: that neither the tendon of the external oblique muſcle, nor the peritonæum, in that part through which the ſpermatic veſſels deſcend from the abdomen, properly ſo call'd, towards the ſcrotum; I ſay, that neither this tendon is perforated, into the form of a real ring, nor the peritonæum is hollow'd out into a ſheath; both of which circumſtances were generally believ'd; but only ſome filaments were ſent down, here and there, over thoſe veſſels: nor was there any other connexion betwixt the peritonæum, and the tunica vaginalis.

From whence you alſo underſtand, that he did not conſider that proceſs as a kind of continued canal; which, having firſt cloſely embrac'd thoſe veſſels, at length expanded itſelf into the tunica vaginalis. Nor indeed could he be ignorant that the cavity of this coat does not raiſe itſelf up much above the teſticle; as this not only appears from inſpection of the parts ana-

(*p*) Epiſt. 34. n. 5.

tomically,

tomically, but even Swammerdam in his *Miraculum Naturæ* expreſly admoniſhes us, that this coat "does not extend itſelf much beyond the teſticles."

And Blaſius, having follow'd this opinion (*q*), has made, from thence, ſuch deductions as I ſhall take notice of below (*r*), when I treat of the hydrocele: in the mean while you may ſee them in the Sepulchretum (*s*). And as theſe deductions are transfer'd thither, ſo it would have been alſo proper, to transfer what has been obſerv'd by Swammerdam, in the place refer'd to; and what Juſtus Schraderus (*t*) has obſerv'd together with him, of the proceſs of the peritonæum; if there be ſuch a one; and the hernial ſacculus, being quite different things.

What is it then, you will ſay, that Boſcus relates in the Sepulchretum (*u*); "that the vagina of the teſticle, made by the peritonæum," was demonſtrated, by him, in a child labouring under an enterocele, "to be ſo dilated "in its origin, and quite to the fundus, and termination of it, that two "fingers eaſily were introduc'd into it?"

I ſhould ſuppoſe it probable, that by ſome very rare accident the lower part of the hernial ſac was burſt through on one hand; and on the other, that the upper part of the tunica vaginalis was ruptur'd alſo; by which means they had coaleſc'd into one tube: or that, as Mery (*x*) ſuſpected in a certain ſingular obſervation of his, ſimilar to the preſent, in this boy the tunica vaginalis, as is the caſe in moſt quadrupeds, had happen'd to be quite pervious, from the cavity of the belly to the teſticle; I ſhould ſuppoſe it probable, I ſay, if Boſcus did not affirm that he had ſeen the ſame thing "frequently," and did not think "it was eaſily to be ſeen by all."

Since therefore, it has not only not happen'd to others, to find it thus, but to me likewiſe; and ſince it has even been found quite otherwiſe; it remains to ſuſpect that this author, and thoſe who were preſent, were led into an error; perhaps by the extenuation, and adheſion, of both the coats to each other, and at the ſame time to the teſticle, in ſo great a degree, that this might ſeem to be quite protuberating within the hernial ſac, in the body in queſtion.

9. But it becomes us, ſtill more, to beware of other blunders in the living body; leſt we imagine an inteſtine, or the omentum, to be prolaps'd out of the cavity of the belly, without reaſon.

There are many things which render incautious perſons liable to this error; as, for inſtance, the teſticle, when about to deſcend into the ſcrotum very late, as ſometimes happens; for it raiſes up the groin, yet cannot eaſily be miſtaken for a bubonocele; except by thoſe who, not imitating Brechtfeld (*y*), neglect previouſly to examine the ſcrotum, eſpecially in children, and obſerve the teſticle to be deficient therein: as for inſtance alſo, one of the inguinal glands, increas'd into that form which I deſcrib'd in the thirty-firſt letter (*z*), in the butcher; or many of them together with coagulated ſerum,

(*q*) Obſ. Anat. in Hom. ubi de Teſte.
(*r*) N. 32.
(*s*) Sect. hac. 29. obſ. 2.
(*t*) Dec. 2. Obſ. Anat. Med. 5.
(*u*) Sect. cit. obſ. 5.
(*x*) Mem. de l'Acad. R. des Sc. a. 1701. obſ. 3.
(*y*) Vid. apud Bartholin. Act. Med. Hafn. vol. 1. obſ. 106.
(*z*) N. 19.

ſuch as Reiſelius found (*a*): and finally, as other appearances; in order to prevent being impos'd upon by which, all the other circumſtances muſt be accurately inquir'd after, and conſider'd.

I was at Venice, when a woman ſent for ſurgeons, and phyſicians; and among theſe Santorini; in order to aſcertain the nature of the tumour, which was prominent in one of her groins; as ſhe fear'd leſt it ſhould be a bubonocele, for this reaſon, that it had appear'd ſuddenly, as ſhe was ſtraining to diſcharge the harden'd excrements from the inteſtines.

All ſigns of a hernia were abſent; except that immediately upon applying their hands to that part, the woman diſcharg'd wind by eructation.

Santorini, obſerving the phyſicians to be in doubt, merely on this account, ſmil'd; and ſaid to them, and whatever part of my body you touch, you will hear eructations immediately come on. They inſtantly made the experiment, and found it to be as he had ſaid.

When Santorini related theſe things to me, and to ſome more friends, others wonder'd at it as an unheard of circumſtance; but I ſaid, it is extraordinary indeed, yet not unheard of. For I remember to have read, in Etmuller (*b*), " that what Bartholin in the *Acta Medica Hafnienſia*, page one hundred " and ninety-nine, and Rhodius in the fifty-ſecond obſervation of the ſecond " chapter, have obſerv'd, of continual eructations being excited, by external " friction, in any part of the body whatever, is very extraordinary."

Yet leſt the ſame thing happen to you, which happen'd to my friends; if you ſhould chooſe, in ſo very rare a caſe, to turn to the authors themſelves, pointed out by Etmuller; in Rhodius you will certainly wiſh for a more happy memory in the reference; but in Bartholin you will ſee there is a typographical error; page one hundred and ninety-nine being put for a hundred and ninety-four; and will really find the obſervation of a man, " who from a " ſlight friction of any part of the body, immediately fell into ſo enormous " an eructation, that he did not ceaſe to eructate before the friction ceas'd." But that obſervation is the hundred and ſecond of the firſt part, of the firſt volume, of the acts already quoted; Brechtfeld, phyſician to the king's mother, being the author.

10. There are other appearances alſo, which are not equally rare to be met with, nor yet very frequent; and theſe not only in the groins, but alſo at the navel, and the ſcrotum; which may ſometimes create a difficulty, to phyſicians, in diſtinguiſhing ruptures, and ſometimes deceive them.

Thus I remember, that, in regard to a certain moſt ſerene prince; who, among other things, was alſo ſubject to flatus, and hypochondriac diſtentions of the belly, it was related to me by his phyſicians, who were in other reſpects excellent men, that a little above the navel of this great perſonage, and on the left ſide, an epiplocele had appear'd: in examining of which place, although I perceiv'd a kind of lax and ſlight prominence, of a circular circumference, the diameter of which was equal to three inches at leaſt; yet as I perceiv'd nothing unequal to be under it, and the prince himſelf did not give ſuch anſwers to my interrogations as confirm'd the judgment of the phyſicians; I choſe rather to withold my aſſent: nor was I ſorry for it, when,

(*a*) Eph. n. c. dec. 2. a. 7. obſ. 12. (*b*) Prax. l. 1, ſ. 4. c. 2. in Prognoſ.

after ſome months, the patient having died from quite a different cauſe, I was inform'd, by the account of the diſſection being ſent to me, that the deception refer'd to by the celebrated Heiſter (*c*) had happen'd; I mean that there was nothing under the ſkin, beſides fat diſtending the cells of the membrana adipoſa, that was puſh'd outwards, not by the peritonæum, which was by no means lax, but only by reaſon of the very great quantity of fat, which was prominent in that part: of which kind of tumours I ſhall write to you hereafter (*d*).

But that this kind of tumour ſometimes reſembles bubonoceles, appears from the obſervation of Schulzius (*e*), in a man, in whom it was ſo much the more eaſy to be deceiv'd, becauſe, as he was of a very lean habit, nobody would have thought of ſo great a quantity of fat being join'd to the ſpermatic veſſels.

And although another whom Petſchius (*f*) diſſected was very fat; yet the deception was very natural for this reaſon; becauſe the fat, collected in the cellular ſubſtance of the peritonæum, was carried out "through the rings to "the ſcrotum;" not on both ſides, but in the right ſide only; in ſuch a quantity, that there ſeem'd to be an oſcheocele in that part.

Moreover, in the ſcrotum; where, in other reſpects, frequently, when there is a complex kind of hernia, the one is obſcur'd by the other, as when a great quantity of water, lying round about, prevents us from diſtinguiſhing the included omentum, or inteſtine, or both, with our fingers; it may beſides ſometimes happen, that we may ſuppoſe a ſimple kind to be complex; or at leaſt ſuppoſe it to be what it is not.

For who; in that obſervation of Veſalius, for inſtance (which you find copied in the Sepulchretum alſo (*g*)) when he had obſerv'd the ſcrotum to be ſo large and heavy; who, I ſay, would have thought it to have ariſen from a part of the omentum only, which had fallen down thither, increas'd to ſuch a magnitude, as "to weigh four or five pounds?"

Or how few; to come to a more recent example; would have been able readily to avoid the deception (into which Gunzius himſelf (*h*) confeſſes, with a very commendable ingenuouſneſs, that he had fallen) ſo as to think; when they ſaw a tumour narrow, and conſtricted at the groin, but in the ſcrotum large, and extenſive, with a rotundity of figure; that no part of the inteſtines was there: but only that the omentum, which was found to be grown very thick, and folded back at its lower part, was contain'd therein?

Or who, finally, is there; to whom the obſervations (that are not often to be met with) of thoſe excellent men, whom I commended to you in the thirty-fourth letter (*i*), are unknown; that, when he ſees this ſymptom to be wanting, and not to be added to moſt of the others, of an intercepted inteſtine; I mean that the paſſage of the inteſtines is obſtructed; dare affirm that ſome part of theſe is intercepted, either at the navel, or at the groin, or in the ſcrotum; as others have found, or at the upper part of the thigh, as I have found (*k*): and on the other hand, although no excrements paſs, that, never-

(*c*) Inſt. Chir. p. 2. ſ. 5. c. 120. n. 1.
(*d*) Epiſt. 50. n 24.
(*e*) Act. n. c. tom. 1. obſ. 225.
(*f*) Sylloge. anat. obſ. §. 89.
(*g*) Sect. hac 29. obſ. 15. §. 3.
(*h*) Proluſ. de Entero-Epiplocel.
(*i*) N. 16. 17.
(*k*) Ibid. n. 15.

theleſs,

theleſs, nothing but ſome part of the paries of the inteſtine is intercepted, as I have formerly ſeen in the groin (*l*); and very lately, even below this, that very experienc'd ſurgeon Anthony Benevoli (*m*).

But perhaps I ſhall alſo have occaſion, hereafter, to point out blunders, which may eaſily happen, in the diagnoſis of herniæ.

11. For now ſomewhat muſt be ſaid, of thoſe things that relate to the replacing of the inteſtine prolaps'd into the ſcrotum; in order to ſatisfy you in your enquiry, whether Valſalva was then averſe to the uſe of glyſters? This gentleman took the utmoſt care, as his duty was, and as you may perceive even from the opinion which he wrote, that nothing ſhould obſtruct the replacing of the inteſtine; and even that every thing ſhould, as far as poſſible, give way to their return into the belly.

Therefore, when the hernia was become ſomewhat ſoften'd; which he brought about by the application of balls of raw ſilk, moiſten'd in hot water, in which chamomile flowers, melilot flowers, linſeed, and fænugreekſeed, had been boil'd, and renewing them every fourth hour (for this was then the cuſtom at Bologna, though the balls of raw-ſilk were more frequently moiſten'd with the lixivium; here they uſe ſponges dip'd into the dregs of olive oil made hot) he then endeavour'd, with a gentle hand, to replace the inteſtines; and this at a time when the ſtomach had been empty as long as poſſible, without any other ſituation of body being requir'd in the patient, than that which, as it is cuſtomary, he preſcrib'd from the very beginning: and obſerving that inſtant of time in particular, in impelling the inteſtine, when the patient, by his orders, produc'd his expiration to a conſiderable length.

But previouſly to this he had order'd blood-lettings: eſpecially where there was too great a quantity of blood; at which time he alſo recommended the other uſual remedies; among which I underſtand even glyſters; and at the ſame time he always preſcrib'd great ſparingneſs, in the uſe of food and drink, and the avoiding of every thing that could generate flatus: and beſides theſe things he ordered an emollient broth morning and evening; and oil, freſh-drawn from ſweet-almonds, to be taken through the day, in the quantity of a ſpoonful at a time, ſo as not to conſume more than two ounces every day.

After he had replac'd the inteſtines, he took care the patient ſhould keep the ſame poſture of body; and that the return of the hernia ſhould be prevented by a proper bandage; to which a piece of ſoft ſponge, three inches long, as many broad, and one thick, was faſten'd. But when, after having often attempted to replace the prolaps'd parts, at proper intervals, he did not ſucceed in the attempt; and, in the mean while, no other violent ſymptoms oblig'd him to change his deſign; rather than create an inflammation, by teazing the part to no purpoſe, he then order'd the patient to avoid all theſe things which I have mention'd above, and to keep up to the ſame mollifying regimen, which I ſaid may be made uſe of both internally and externally; but with thoſe particularly the poſture of lying down ſo often inculcated; I mean that the pubes ſhould be higher than the other part of the belly: for by this means he ſaid that nature often perform'd the cure of herſelf.

(*l*) Ibid. n. 18. (*m*) Due Relaz. Chirurg. Relaz. 2.

Thus

Thus I have contracted the whole of his *Conſilium* into a ſhort compaſs for you; not becauſe the greater part of the methods preſcrib'd, are not common to all practitioners; but even for this very reaſon, that they are ſo: and this in order to convince you, that; as they all agree in this one intention, which is indicated by reaſon itſelf, that there may be nothing in the belly to reſiſt the return of the inteſtines, but that every thing may give way; it does not appear, why formerly, and even in our time, ſome were ſo averſe to the uſe of glyſters: by means of which whatever can be brought down this way, may be evacuated from the inteſtines, without any irritation.

For as to their ſaying that glyſters go down to the ſcrotum, and, by reaſon of their weight, depreſs "the inteſtines more, and increaſe the hernia;" this perhaps would have place, where the part of the colon, neareſt to the rectum, had fallen into the ſcrotum; or where, by the periſtaltic motion being already inverted, every thing was hurried away, from the rectum, into the other inteſtines.

And neither of theſe circumſtances can be aſſerted by them: that is, the firſt cannot, becauſe they confeſs "that the colon ſeldom goes out" into the ſcrotum; nor the ſecond, becauſe when "the moſt violent ſymptoms have "already come on;" then, at length, even they themſelves permit us to have recourſe to glyſters.

12. But when there is a neceſſity of making uſe of the knife, as Valſalva, whoſe method in particular you deſire to know, has left nothing in writing, relative to the manner in which it ought to be us'd; there is no reaſon why I ſhould detain you, on ſuch ſubjects as are ſufficiently treated of, by other authors.

I will, however, juſt touch upon a few things, which may be confirm'd by his diſſections, or mine. And firſt, in regard to thoſe things which moſt obſtruct the return of the inteſtines; a narrowneſs at the orifice of the ſacculus, a hardneſs of it, and a connexion of the prolaps'd parts to the ſacculus, or to one another; that theſe appearances have occur'd to us ſometimes, certain paſſages of the fifth (*n*), twenty-firſt (*o*), and twenty-fourth letters (*p*), and even of this very letter (*q*), will ſhow.

You will, afterwards, attend to the changes which we find in the parts; either the parts within the ſacculus, or thoſe that lye near it. Among thoſe, in particular, that is moſt worthy of obſervation which Valſalva ſaw, as you have it in the ſecond letter (*r*); that is to ſay the teſtis; ſeemingly from the effect of an old epiplocele, in a young man, who had, in other reſpects, enjoy'd firm health, and was about two and twenty years of age; chang'd univerſally into a membranous body.

You will read, in the Sepulchretum (*s*), of "very ſmall, compreſs'd, and "yellowiſh, teſtes, ſcarcely equal to the bigneſs of a nutmeg," being found with a hernia; but a large hernia, and not made up of the omentum only, but alſo of no ſmall portion of the meſentery, and the inteſtinum ileum; and that of twenty years ſtanding, and in an old man of ſeventy.

(*n*) N. 2.
(*o*) N. 15.
(*p*) N. 5. 9. 18.
(*q*) N. 5.
(*r*) N. 20.
(*s*) Sect. hac 29. obſ. 13.

He likewiſe was an old man, whoſe teſticle neareſt to the hernia, I found to be leſs than the other, and that in a conſiderable degree, being, at the ſame time, of a brown colour internally, inclining to red; as I ſaid in the twenty-fourth letter (*t*). Yet that hernia was an enterocele; and by reaſon of inflammation fatal: ſo that it is evident, to what cauſe this colour, of the teſtis, is to be referr'd.

Theſe two obſervations then, ſhow that the magnitude of the teſticles is ſometimes diminiſh'd, by reaſon of the parts being prolaps'd into the ſcrotum: and the firſt demonſtrates that the very ſtructure is ſometimes univerſally chang'd.

From which, as you may perceive that what ſome have pronounc'd, is not always true; I mean, "that to be afraid of ſterility, or impotency, from rup-" tures, is futile and abſurd;" ſo you may alſo conjecture, that men afflicted with herniæ, ſometimes, become impotent; not only becauſe "the veſſels," as Boerhaave (*u*) has taught, "grow to the ſac;" but alſo becauſe, beſides the veſſels, the teſtes themſelves are preſs'd upon by the weight, not only of the prolaps'd inteſtine, but of the meſentery likewiſe; and ſometimes by that of the omentum alone: and this for a long time together.

13. And what changes ſometimes happen, to the parts which fall into the hernial ſac; and how eaſily many, and conſiderable, errors, in the art of healing, may be produc'd by the neglect of this animadverſion; Gunzius (*x*) has very learnedly admoniſh'd, where he confeſſes his own deception, in reſpect of the omentum. To whoſe obſervation of the omentum being become very thick, and fat, you will join the obſervations that were made before, of Sprogelius (*y*), in a living man, and of Mauchartus (*z*), in a body after death.

And that you may not ſuppoſe the omentum alone to be chang'd; you will alſo add that which is related by Lavaterus (*a*), "of the inteſtines being "ſoft like wet paper;" ſo that there is leſs occaſion to be ſurpriz'd, if a ſuppuration in particular, or a gangrene, coming on, they are broken through, and pour out what liquid fæces they contain, into the cavity of the hernia: and ſo this hernia either reſemble another ſpecies of herniæ, or an abſceſs; as the obſervations of the celebrated Heiſter (*b*) in living, and in dead bodies, jointly demonſtrate.

But to inſiſt upon the changes which Valſalva, and I, have ſeen to happen in the prolaps'd parts; you will learn them from the twenty-fourth letter.

Nor do I ſpeak only of changes in the inteſtines; which you will find, in ſeveral places, to have been either inflam'd, or black and gangrenous, in conſequence of the interception; but in the omentum likewiſe, and meſentery. For you will read that the omentum was doubled up, and form'd into a round body (*c*), which I could not learn the nature of, but by cutting into its ſubſtance.

(*t*) N. 16.
(*u*) Prælect. ad Inſtit. §. 641.
(*x*) Proluſ. ſupra ad n. 10. cit.
(*y*) Eph. n. c. cent. 7. obſ. 70.
(*z*) Diſſert. ſupra ad n. 3. cit. c. 2. in fine.
(*a*) Diſſert. ad eund. n. 3. cit. n. 23.
(*b*) Diſſert. de Hernia Incarcer. §. 10 & 15.
(*c*) N. 9.

And

And that a portion of the meſentery appear'd, to Valſalva, to be *(d)* almoſt fleſhy, you will learn in the ſame place. That portion, I ſay, which, if the double inteſtine deſcends pretty low, muſt, of courſe, follow it within the ſacculus; for by reaſon of the fat, with which it is furniſh'd in great quantity, it can be much more eaſily relax'd, than ruptur'd. And it is ſuppos'd never to be more relax'd than in herniæ.

" This ſoftneſs, and laxity, of the meſentery," ſays Wharton *(e)*, " is fre-
" quently found in an inteſtinal hernia. For it is ſometimes ſo far relax'd,
" as to permit the inteſtine attach'd to it; which it ought naturally to con
" fine within its own circumference; to fall down into the ſcrotum."

But he whom I frequently, and deſervedly, commend to you, Benevoli *(f)*, has undertaken to ſhow, in a diſſertation which certainly well deſerves to be read, that a laxity of the meſentery takes place always, not to ſay *frequently*, in theſe herniæ; and that even from thence they firſt have their origin. To which ſuppoſition relates the obſervation, that is given in this ſection of the Sepulchretum *(g)*, from Hoffmann the father; who cries up the virtues of his magnetic plaiſter, in drawing up the inteſtines from herniæ, when applied to the loins.

But if the virtues, and efficacies, of this plaiſter are really ſo great, as to penetrate through the thickneſs of the loins; which it is very difficult to conceive; and even as they muſt, of courſe, be, to pervade the lumbar vertebræ, and corroborate the meſentery; I am ſurpriz'd that his ſon has made no mention; which, as far as I remember, he has not done; of this plaiſter, in any one of the ſeveral places, where he treats of herniæ, and their cure.

However, as Etmuller affirms *(h)*, " that he had ſeen ſurprizing effects " from this plaiſter, I will, if you pleaſe, leave the merits of it entirely undetermin'd in this place; eſpecially as, if a perſon, afflicted with a rupture, ſhould be willing to apply corroborants, and aſtringents, to the loins; in that part where the meſentery is connected thereto; Benevoli has no objection to ſuch an application.

But I do not believe that Benevoli had ſeen what was written, many years ago, by the celebrated Roſtius *(i)*; when in a man, afflicted with a rupture, he had found the meſentery lax; " I mean, that it was moſt probable inteſ-
" tinal herniæ particularly requir'd this laxity; ſince the inteſtines are firmly
" connected to the meſentery, and therefore cannot be remov'd from their
" ſituation, unleſs the meſentery, from ſome violent cauſe or other, firſt
" give way:" nor do I believe, that the diſſertation of Benevoli had come to the hands of the celebrated Brendelius *(k)*, when he, ſtill more confirm'd the ſame opinion.

For to the obſervation of Roſtius, and the others of Benevoli; and that particularly which was made on the taylor, the greater part of whoſe large enterocele was not now made up of the inteſtines, but of an expanſion of the meſentery; you have ſome from Brendelius, principally, that may be added: ſince he aſſerts, that, as often as ever he inquir'd into this circumſtance, he

(d) N. 5.
(e) Adenogr. c. 11.
(f) Diſſertazion 1.
(g) Obſ. 14. §. 3.
(h) Prax. l. 1. ſ. 12. c. 1.
(i) Act. n. c. tom. 2. obſ. 178.
(k) Progr. de Herniar. Natalibus.

had found the meſentery to have been, from the very original, " always im- " moderately relax'd, and, in a manner, diſtended;" and even in a porter, that the peritonæum itſelf was there disjoin'd from the large veſſels, and that the meſentery in him, and in another, " was diſtended incredibly:" ſo that in the ſecond, at leaſt, in the places, where it generally is very ſmall " it was of " the extent of three or four ſpans."

And leſt you ſhould imagine theſe things to happen from the weight of the prolaps'd inteſtines, as well as the pains of the loins; Roſtius admoniſhes us, that thoſe who contract hernias, from the motion of riding on horſeback, " generally feel a painful tenſion, firſt of all, about the loins; a pretty clear proof," ſays he, of the meſentery, which is fix'd there, " being affected " with a tenſion, or diſtraction, of the fibres."

And indeed, I have obſerv'd that the attentive phyſician Riedlinus (*), though he did not find, among authors, the ſigns of an enterocele coming on, had given hints long before, from a certain obſervation of his own, from what ſymptoms we may ſuſpect it: and, in the number of theſe, had, in the firſt place, ſet down pains of the loins.

But it is certain, you will ſay, that in an oſcheocele, a very eminent anatomiſt found the meſentery, which being, " like a ſmall rope, tenſe, and " hard, had deſcended together with the inteſtines." Shall we ſay then, that there was any thing lax, or weak, in a meſentery of that kind, and impute the origin of the hernia thereto?

I will aſk of you, however, whether you ſuppoſe it to have been ſo tenſe, and hard, at the time of its coming down; and that it was not poſſible, for the ſame thing to have happen'd to it afterwards, which I ſaid I had ſeen, even in the omentum itſelf, when intercepted; or that which Mauchartus, and Sprogelius, have remark'd in the ſame part, in their obſervations " of " its being very hard and almoſt ſcirrhous," as already quoted?

And I will moreover aſk you, if it could, poſſibly, have deſcended, with ſome ells of the ſmall inteſtines, into a very large hernia, unleſs it had been extremely lax? For it is certain that, when it is in a natural ſtate, it cannot reach ſo low downwards.

But do not be forward to ſuppoſe, that I ſay theſe things for the ſake of defending the opinion of Benevoli, rather than what appears to me to be truth; eſpecially as I attribute ſome of theſe effects, as he himſelf likewiſe did, to the laxity of the peritonæum alſo, and the rings; in conjunction with Roſtius and Brendelius; and not all of them to the laxity of the meſentery.

14. From what I have hinted, and even ſtill more from thoſe parts of the letter, to which I have referr'd, you will call to mind what you have heard from me, at other times, in regard to obſervations made by us, on the bubonocele, oſcheocele, omphalocele, and merocele; and of the parts that have been contain'd in theſe ſeveral ruptures: ſo that there is no occaſion to repeat them here.

I am rather diſpos'd to add ſomething, in relation to theſe two herniæ laſt-mention'd.

In the omphalocele, though the omentum ſeems, as it has been found by us, and by others, to be neceſſarily included from its ſituation; yet

(*) Eph. n. c. dec. 3. a. 9 & 10. obſ. 150.

Ro-

Roſtius (**) ſhows, by his own obſervation, and by thoſe of Arnauld, and Petit, that it is frequently not included; but that a part of the inteſtine jejunum, or colon, occurs without it; where he alſo obſerves other things, in regard to vomiting coming on ſooner, or later, according to the different inteſtine that is intercepted; and not always diſcharging the ſame kind of matter; which remarks will afford you pleaſure as well as profit in peruſing.

But if you ſhould happen to wiſh for diſſections of thoſe who were affected with the merocele, to add to the Sepulchretum, you will find them in the obſervations which I have pointed out above (*l*); and in the papers of Genſelius (*m*) beſides; but particularly in the work of that author who publiſh'd a diſſertation upon this diſorder, which is commonly call'd the hernia femoralis, or cruralis; I mean the celebrated Daniel Koch (*n*).

And perhaps in looking over theſe authors, and thoſe obſervations, and remarking that the greater part of the herniæ of this kind, was found to be in men; it may diſpleaſe you to find it aſſerted, by a phyſician in other reſpects learned, "that men do not readily become ſubject" to this diſorder: although, to confeſs the truth, it has never yet happen'd to me to ſee it, except in women.

Some herniæ, that are very rare; whether you conſider the place in which they are form'd, or the parts that fall down; neither Valſalva, nor I have ſeen.

Among theſe, is that which happens where the obturator nerve, as they call it, comes forth, together with the veſſels of the ſame name; which nerve, the ſame learned phyſician, to whom I juſt now refer'd, has call'd, for I know not what reaſon, "the poſterior crural;" under which term others ſignify the nerve that is the thickeſt of all. Of this hernia, however, conſult thoſe authors that are quoted in the Commercium Litterarium (*o*), and by Platner (*p*).

Much more rare than this, is that which is accurately deſcrib'd by Chriſtopher Henry Papen (*q*); as he had found it in a body after death: for it was very ſimilar to a large oblong bladder, beginning from the right ſide of the anus, and including within it a ſac continued from the peritonæum, the ſmall inteſtines, with the meſentery extremely elongated, and the beginning of the colon: and as theſe viſcera had fallen down through the fiſſure call'd *Inciſura Iſchiadico-ſacra*; as he to whom the obſervation was ſent, that is the celebrated Haller, rightly judges; we will rather reſerve the name of Hernia Dorſalis for that other, if it does at any time appear, which Paul Barbette (*r*), as the author very well knew, and as you alſo have it in the Sepulchretum (*s*), had referr'd to in theſe words: "experience has taught me, that the peri-" tonæum may be ruptur'd even in the poſterior part, towards the back, and " there produce a hernia."

But in the number of thoſe herniæ that are rare, when conſider'd in reſpect to the parts which prolapſe, is the cyſtocele.

(**) Obſ. ſupra ad n. 13. cit.
(*l*) N. 7.
(*m*) Eph. n. c. cent. 7 & 8. in Append. ubi Conſt. Epid. Hungar. a. 1713. in Septembr.
(*n*) C. 2. §. 5.
(*o*) A. 1743. hebd. 47. n. 1.
(*p*) Diſſert. de Hydrocel. §. 2. not. *r*.
(*q*) Epiſt. de ſtupenda Hernia Dorſali.
(*r*) Chirurg. p. 1. c. 8. verſ. fin.
(*s*) Sect. hac 29. obſ. 8.

And as in writing to you upon this hernia, in a former letter (*t*), I made mention of it in ſuch a manner, as to ſhow that it happen'd to women in ſome analogous manner; that is to ſay, the bladder not falling out through the groin; I will now add, that in theſe patients, it does alſo ſometimes prolapſe at the groin: as two obſervations of Benevoli (*u*), whom I have often quoted, teach us.

And as in one of theſe he ſhows, how many years before this diſorder had begun; it appears from hence, that this hernia is not the effect of the original conformation, as Mery (*x*) thought: eſpecially, ſince of ſo many others, which I then pointed out from men, there was not one (as far as I remember) the beginning of which ſeems to have appear'd from the original conſtitution of the body.

How can it happen then, you will ſay, that the connexions, and ligaments, of the bladder, the peritonæum, and the muſcles of the abdomen, ſuffer it to be puſh'd out through one or other of the groins?

Read, I beſeech you, the diſſertation of that ingenious man Jo. Salzmann (*y*), where to thoſe things which Petit (*z*); he himſelf alſo being an obſerver of an hernia of this kind; had produc'd, in order to diminiſh theſe difficulties, he moreover adds other things which tend to make you think leſs of them; and of that one in particular which was drawn from the reſiſtance of the peritonæum, that is mention'd on this occaſion by many, who do not attend to this circumſtance; that the bladder is not in the peritonæum, but under it.

Yet if it ſhould not be poſſible to remove all theſe difficulties, this hernia, nevertheleſs, cannot, for that reaſon, be denied to exiſt; as not only the ſign that has been already pointed out, and is very evidently pathognomonic, has confirm'd its exiſtence, but even inſpections of bodies after death, then pointed out in like manner; as thoſe of our Jo. Dominic Sala in Bartholin, and of Ruyſch himſelf: ſo that it is ſurprizing there ſhould have been any one, ſo late as in the year 1713, who look'd upon this diſorder as new; and though ſome ſaid it was firſt obſerv'd by one, and ſome by another, yet all contended that it was firſt obſerv'd about that time: although, even formerly, Platerus, who is mention'd by me in the ſame place, as ſoon as ever the urine flow'd from the diſtended, and wounded ſcrotum, in an iſchuria of the bladder, knew the diſorder to be this hernia of which we are ſpeaking, and particularly deſcrib'd it.

And leſt you ſhould be inclined to believe, that this contention had related, in part at leaſt, to the hernia of the female bladder, when prolaps'd together with the vaginæ; call to mind that an obſervation of this kind had been publiſh'd by Pyerus (*a*), ſome years before that of Ruyſch, and confirm'd by a diſſection, which you have even in the Sepulchretum (*b*).

This was afterwards follow'd by other obſervations taken from the dead bodies; and particularly by thoſe of the very celebrated Baſſius (*c*), and

(*t*) Epiſt. 41. n. 12.
(*u*) Obſervaz. 25. 26.
(*x*) Mem. de l'Acad. R. des Sc. a. 1713. obſ. 3.
(*y*) De Hernia Veſicæ Urinar. theſ. 22. & ſeq.
(*z*) Hiſtoir. de l'Acad. R. des Sc. a. 1717.
(*a*) Eph. n. c. dec. 2. a. 1. obſ. 84.
(*b*) L. 3. ſ. 31. in additam, obſ. 5.
(*c*) Dec. 3. Obſ. Anat. Chir. 2.

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Burgrafius (*d*). Mery, who had very clearly confirm'd the deſcent of the male bladder, into the ſcrotum, by diſſection in the dead body (*e*), found a hernia of the female bladder in a living woman only, in the perinæum (*f*): a very rare inſtance indeed.

Theſe things, however, I do not ſay with a view to repeat any thing, but to illuſtrate, in a brief manner, what has been hinted at elſewhere; and to compleat whatever belongs to the hiſtory of herniæ of the bladder.

One ſtill more rare than the cyſtocele is the hyſterocele, when laid open by diſſection. Yet beſides that obſervation of it, which is transferr'd into the Sepulchretum (*g*), two were publiſh'd in the epiſtle of Doringius to Hildanus; in reading the former of which, that is taken from the inſtitutions of Senertus, you will obſerve this alſo; that in ſo large a hernia, and one that had its origin from a blow, the peritonæum, as far as Senertus could judge by the ſight, had remain'd entire.

But who could doubt, even without diſſection, that the uterus was really contain'd in three other herniæ; two of which are mention'd as "hanging "down beyond the middle of the thighs," and a third "quite to the knees;" by Carolus Sponius (*h*), and Frederic Ruyſch (*i*); when he reads that the fœtuſſes were happily brought forth, the hernia being "lifted up" by the midwife, which Ruyſch himſelf ſaw; or ſuppoſes that after the fœtus was brought forth, the hernia ſubſided very much, and remain'd without its former internal motions: which marks, or others of that kind, Sponius muſt, of courſe, have attended to.

Add to theſe, the herniæ which are form'd by the prolapſus of other viſcera; as for inſtance, by the ſpleen, which was found by the ſame Ruyſch (*k*), in the dilated peritonæum; and by the ſtomach; two obſervations of which kind, although not confirm'd by diſſection, yet by no means obſcure, are given us by Peter Kirſchbaum (*l*): and finally by the liver; which was found in a hernia, on diſſection, by Solomon Reiſelius (*m*).

Theſe, and other hernias of this kind, if you conſider the viſcus that they contain, you will name from thence; as Reiſelius does his hepatocele. But if you have a view to that part of the abdomen, in which they happen, you will name them from thence.

For if you ſhould call any one *hernia ventris*, or *ventralis*, as many do now; you would rightly call it to be ſure: but as you would point out nothing more than a genus, which is too extenſive in its ſignification, you might ſtill be aſk'd about the particular ſituation; which you could not have been, if you had at firſt convey'd this idea.

And, in determining the ſeat of ruptures, do not imagine that you ſhould do wrong, if you were to call that umbilical, which is not in the very ring of the navel; in which place I ſcarcely remember to have ſeen the prolaps'd part, in any other patients than in one very tender male infant.

(*d*) Act. n. c. tom. 4. obſ. 126.
(*e*) Mem. cit. obſ. 1.
(*f*) Obſ. 2.
(*g*) L. 3. ſ. 38. in Append. obſ. 2.
(*h*) Apud Lavater. Diſſert. de Inteſt. Compreſſ. Theſ. 13.
(*i*) Adverſ. Dec. 2. n. 9.
(*k*) Ibid.
(*l*) Diſſert. de Hernia Ventric. §. 3. Hiſt. 1, & 2.
(*m*) Eph. n. c. dec. 3. a. 7. obſ. 6.

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Let it be ſufficient for you that it is near the navel; for you will have companions, and thoſe not deſpicable ones neither, who will even underſtand it in the ſame light; and do at preſent uſe it in this ſenſe: but there may be as many different ſituations, as there are regions of the abdomen.

Thus, for inſtance, Lavaterus (*n*) ſaw a hernia in the right hypochondrium, under the ſpurious ribs, which intercepted a part of the inteſtinum jejunum. Thus other herniæ happen in other regions; all which he ſucceſſively names, or refers to in order; ſo that I cannot help being ſurpriz'd at Rolfinc (*o*), for denying that herniæ happen in the hypochondria, or the pubes; his words are, "for I know of no example that can be given, where-"in theſe parts were ever ſeen to be thus affected."

For, although other examples, probably, did not occur to his memory at that time; notwithſtanding they are now ſo frequently to be met with, that even I myſelf have twice examin'd (*p*) herniæ at the pubes, by diſſection; yet, at leaſt, he ought not to have forgotten the paſſage of Hippocrates (*q*), which his interpreter, Franciſcus Valleſius (*r*), and Hieronymus Mercurialis (*s*), had conſider'd; I could wiſh with ſufficient ſucceſs, and in every part: "Ruptures which happen about the pubes, are, for the moſt part, without "any immediate danger, but thoſe which are a little above the navel, in the "right ſide, are painful, are attended with anxiety, and produce a ſtercora-"ceous vomiting; as happen'd even to Pſitaccus."

This paſſage you will ſee produc'd, in a diſſertation (*t*) which has been learnedly and ſkilfully written, by that celebrated man B. Ignat. le Chauſſe.

15. It now follows, that, as we have treated of true herniæ, we ſhould go on to ſpeak of the ſpurious likewiſe; that is, of thoſe in which there is no prolapſus of any part from the belly.

Theſe are the hydrocele, the pneumatocele, hæmatocele, cirſocele, ſteatocele, ſarcocele, and ſpermatocele. But although theſe are many in number, I nevertheleſs ſhall not dwell long upon them all. For you have already had all the obſervations relative thereto, when examin'd by diſſection, from Valſalva; and moſt of them from me.

16. A hydrocele I have twice deſcrib'd, from the obſervation of Valſalva, in the twentieth letter (*u*). In reading of which over again, you will readily perceive him to be the imitator of Malpighi (*x*). For both of them ſearch into the nature of the fluid in the hydrocele, by the help of evaporation. Both of them preſs'd out ſome ſmall drops from the tunica vaginalis; and Valſalva moreover from the albuginea. From which, as he has left in writing on another occaſion, even when every thing was in a very natural ſtate, he ſaw little drops burſting forth, in a parallel order, upon compreſſing the teſticle.

So alſo Malpighi had ſeen drops "burſt forth from regular orifices," in the tunica vaginalis: "by repeating the compreſſions frequently, others were

(*n*) Diſſert. cit. theſ. 5.
(*o*) Diatrib. de Enterocele, c. 3. §. 4.
(*p*) Epiſt. 5. n. 19. & epiſt. 34. n. 11.
(*q*) De Morb. Popul. l. 2. ſ. 1. verſ. fin.
(*r*) Comment in eam ſect. n. 19.
(*s*) Adnot. in eum libr. n. 6.
(*t*) De Hernia Ventrali ad §. 10.
(*u*) N. 24 & 26.
(*x*) Epiſt. de Struct. Gland.

"ſqueez'd

" ſqueez'd out; and among theſe almoſt innumerable drops, ſome were very " large."

Wherefore, it was the opinion of both theſe authors, that a little moiſture is ſecreted by the tunica vaginalis, in a natural ſtate; and that this moiſture ſerves to lubricate the ſurfaces of that membrane, and the albuginea, by lying betwixt them like a kind of dew, and preventing their coalition; ſo that by this means the teſticle may be kept ſoft, and fit for performing its office: and if this humour is collected together by diſeaſe, that the hydrocele is then form'd.

Yet there are ſome perſons at this time, who ſay that there is no cavity here, and no water in a natural ſtate; notwithſtanding they are not ignorant of Veſalius having nevertheleſs taught us (*y*), that the tunica vaginalis is internally " cover'd over with a kind of aqueous humour;" which, after him, was alſo ſeen by others at different times; and of Boerhaave (*z*) having added, that " having cut open the tunica vaginalis in a horſe, a great deal " of water could be preſs'd out."

But theſe things I do not hint at for this reaſon, that I think this the only way, in which the origin of a hydrocele may be explain'd. And even when I reflect upon all my obſervations with attention, I find none which does not ſhow, that thoſe hydroceles of the tunica vaginalis, which I have examin'd, had deriv'd their origin from hydatids being ruptur'd there.

And this will appear to you in the ſame light, I believe, when you obſerve that in each of them, ſome hydatids were ſtill remaining; either in a perfect and entire ſtate, or half-lacerated; or that ſome traces of them were viſible.

But before I begin to give, or take notice of, theſe obſervations, it may be of uſe to know, that hydatids are ſometimes found within this cavity; even when no hydrocele was yet begun: and if theſe hydatids burſt aſunder, and firſt pour out the water they contain; and after that go on to ſecrete ſtill more and more; there is not the leaſt doubt but they muſt produce a hydrocele.

And in the fourth letter to you (*a*), I have made mention of two hydatids in that part; both of which were lying upon the teſtes, one upon each; both of them large; yet in ſuch proportion that the left was the largeſt; being looſe and free on every ſide, and containing ſuch a humour, as I did not ſee concrete when put upon the fire; but leaving a certain thin pellicle behind it, evaporate away; juſt as it has ſometimes happen'd to Malpighi (*b*), and to Valſalva (*c*), in examining the water of the hydrocele in the ſame manner. But let us go on to thoſe obſervations.

17. An old ſoldier, who was gibbous, being brought into this hoſpital, and dying there very ſoon after; it was impoſſible to learn what diſorders he had been afflicted with, and what had been the occaſion of his death, ſo much from the relation of the man himſelf while living; or from the obſervation of the phyſicians; as from his diſſection after death.

The body, ſuch as it was, was carried to the college, where I was teach-

(*y*) De Corp. Hum. Fabr. l. 5. c. 13.
(*z*) Prælect. ad Inſtit. §. 641.
(*a*) N. 30.
(*b*) (*c*) Locis paulo ante indicatis.

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ing anatomy, in that very cold ſeaſon which I have ſpoken of already (*d*); that is in the month of February of the year 1740.

The belly ſhow'd no preternatural appearance, if you except what relates to the ſcrotum; of which I ſhall ſpeak hereafter; and ſomething bony in the iliac arteries.

In both cavities of the thorax was a conſiderable quantity of water; in the pericardium not a little; being every where concreted by the froſt. Yet the lungs; except that one lobe was connected with the pleura, for a conſiderable extent, and, at the firſt diviſion of the bronchia, they had one bronchial gland, amongſt a great number, of a very conſiderable ſize; ſhow'd no great marks of diſeaſe: nor did the legs and feet ſhow even any ſlight beginning of an œdematous tumour.

To the internal ſurface of the pericardium, which was thicken'd, and to the external ſurface of the heart, adher'd, here and there, a kind of thick and almoſt puriform matter: and this I ſuppos'd to be the more viſcid and polypous part of that water, which, as I have already ſaid, had been frozen within the pericardium.

When this matter was pull'd away from the heart, the fat, with which it was cover'd, every where, in great quantity, ſeem'd to be leſs eroded, as it were, in ſeveral places. But I did not ſuffer myſelf to be deceiv'd by this appearance, as I bore in mind thoſe things which I had formerly obſerv'd; as I have ſufficiently demonſtrated to you, when I wrote the twenty-firſt (*e*), and twenty-fifth (*f*) letter to you: where I take notice, in a curſory manner, even of this ſoldier.

The heart itſelf ſeem'd to be larger than it naturally is, and the branches of veſſels to be wider; particularly thoſe branches of the great artery that are call'd ſubclavians and carotids. But the valves of the aorta were evidently enlarg'd, and the trunk itſelf, in that part which lies neareſt to the heart.

Nor were beginning oſſifications wanting here and there, in that part; and betwixt the internal coats were even ſmall bony ſcales; which occur'd ſtill more frequently beyond this tract, and particularly within the orifices of the left carotids; that is to ſay, of the internal, and external; and in the brachial artery alſo, at the flexure of the elbow, and beneath it.

The ſeven or eight upper vertebræ, of the thorax, were ſo plac'd, that the ſpine being there curv'd, and inflected to one ſide, as many of the ribs, of the ſame ſide, were prominent backwards, and made a gibboſity.

The cranium, as better heads were procur'd in the mean while, was not open'd.

It remains that I now ſubjoin what appearances I found by cutting into the ſcrotum a few days after. This part was ſound on the right ſide, both internally and externally; on the left ſide it was tumid. Under the thicken'd coats therefore, I mean the erythroides and vaginalis, and within the enlarg'd cavity of this latter coat, I found water of a brown colour inclining to yellow; half-concreted by the froſt; in ſome conſiderable, but not very great, quantity.

When I examin'd the teſtis, which ſeem'd rather to be extended in its length,

(*d*) Epiſt. 13. n. 5 (*e*) N. 2. (*f*) N. 24.

than to be thicken'd; and the epididymis, which certainly was longer than natural; I obſerv'd a kind of ſmall fimbria to be hanging from the albuginea, where it inveſted the teſticle, very near to the larger globe of the epididymis: and this fimbria I judg'd was to be conſider'd as the relics of a ruptur'd hydatid; eſpecially as, not far from this, I perceiv'd an entire hydatid protuberating from the ſame coat.

18. One of thoſe male bodies, the principal parts of which I diſſected at Padua, in the latter end of November of the year 1718, had one ſide of the ſcrotum ſomewhat tumid.

Betwixt the tunica vaginalis and albuginea, of that ſide, I found a water of the colour of urine; but not in great quantity: the albuginea was unequal with very ſmall tubercles: and I was led to ſuppoſe theſe to have been the remains of hydatids; which had burſt aſunder, and diſcharg'd their water; by ſeeing ſome hydatids, in the ſame coat, which were not yet quite burſt aſunder: and theſe hydatids I demonſtrated to thoſe who were preſent.

19. There was another male body, among thoſe that I diſſected at Bologna, in the ſpring of the year 1703, which had a hydrocele of a moderate ſize, on one ſide in like manner.

Thoſe two ſame coats contain'd, betwixt them, a fluid ſimilar to water in which freſh meat has been waſh'd. And from the larger globe of the epididymis, a ſmall hydatid was pendulous, by means of a ſlender and ſhort filament. Through this filament paſs'd a ſanguiferous veſſel of a much ſmaller ſize.

20. That in theſe three examples there was no great quantity of water, we may conjecture is to be, perhaps, accounted for from hence; that neither all the hydatids had burſt aſunder intirely; and they which had burſt were ſmall; nor had they continued to diſcharge a fluid long after their rupture.

But the laſt example will bring to your mind thoſe things which I hinted in the thirty-eighth letter *(g)*, of the origin of hydatids, pendulous, in like manner, from the teſtes of women. And as many things, that I have there ſaid upon hydatids *(h)*, are illuſtrated by thoſe that I ſay here; ſo, on the other hand, thoſe, if you read them over again, will contribute to the illuſtration of theſe.

Wherefore I ſhall here ſuperſede the examples of thoſe things which happen to hydatids, in other parts in like manner, as well as in the teſticles of men. In which you may now, with me, obſerve the very ſame ſeries of changes, from the obſervations before given.

21. And firſt I would have you call to mind, that, in the butcher (whoſe diſſection I gave you in the twenty-firſt letter *(i)*) when within both the *tunicæ vaginales* was a yellowiſh water; the hydatids, which, I ſuppoſe, had pour'd out this fluid not long before, appear'd to me like veſicles made up of thick parietes; as if contracted into themſelves, and therefore, almoſt ſolid, and of a fleſhy colour: each of them being pendulous from the albuginea, near to the larger globe of the epididymis, by means of a peduncle; and juſt in the ſame place, on the right and on the left ſide.

And from hence; which I obſerve by the way; you will naturally con-

(*g*) N. 38. in fin. (*h*) N. 35. & ſeq. (*i*) N. 19.

ceive, what was that fleſhy gland, as it were, which Valliſneri (*k*) has taken notice of, as hanging by its proper ſtalk, from the female ovary: and from ſo frequent an obſervation of hydatids, either in a fix'd or a pendulous ſtate; both in the ovaries of women, and the teſticles of men; you will take a new argument of the ſimilitude that there is betwixt both theſe parts, if we conſider the ſubject in this general way. But from a veſicle that was almoſt ſolid, let us now go on to a tubercle, or corpuſcle, which was already quite ſolid.

22. A herdſman died in this hoſpital, after the middle of January in the year 1743. As I cannot certainly ſay what diſorders he had been chiefly ſubject to, and by what diſorders he was carried off, you will yourſelf conjecture them from the preternatural appearances that I found; when the parts which belong to the belly, and the thorax, were diſſected in the college.

The thorax; for with this cavity I chooſe at preſent to begin; had the lungs cloſely connected to the pleura, though in other reſpects ſound: the heart was enlarg'd: and the great artery was not without a ſmall bony ſcale, where it began to deſcend: the carotids were much thicker than uſual, and the internal jugular veins were extremely wide; eſpecially that on the right ſide; which, to appearance, being fill'd more with air than with blood, was equal to the thickneſs of a man's thumb.

When the belly was open'd, our eyes were attracted by the lower part of the inteſtine colon, on the left ſide, which was dilated with flatus; and, for that reaſon, ſo forc'd out of its uſual ſituation, that the curv'd part of this inteſtine was, in almoſt its whole extent, plac'd tranſverſly in the umbilical region; thereby laying great room for errors, if any ſhould, from the ſeat of pains in that part, have ſuppos'd that not the colon, but the inteſtine jejunum, was the part affected thereby.

The ſtomach was very large, and very lax. In this cavity were contain'd many worms: the internal coat was wanting, for ſome ſpace, on the left ſide, and on the poſterior ſurface of the fundus; and in that part which is very near to the pylorus, the beginning of a gangrene appear'd.

Where the omentum adher'd to the ſtomach; in which place, in general, you certainly ſee very ſmall glands of the lymphatic kind, if you ſee any at all; occur'd ſome of the magnitude of a ſmall bean. The ſpleen was ſix inches in width, two or three inches thick, a ſpan and a half long, and of a very lax and ſoft ſubſtance.

Yet the liver was not bigger than it naturally is, and internally, in one half of it, was colourleſs; whereas the other half was of a dilute yellow: and from this viſcus, were ſent forth three or four biliary ducts, than which I never remember to have ſeen any wider; and in particular than one which would almoſt have admitted the point of my little finger.

No cauſe of this dilatation appear'd at that time: but I ſhould, perhaps, have conjectur'd that a calculus had formerly ſtuck in the trunk, in which all theſe branches, according to cuſtom, join'd; if this trunk, which was in other reſpects large, had been, itſelf, alſo, of that width, which was requir'd in proportion.

In the cyſt was a bile of a brown colour; but this bile, nevertheleſs, gave

(*k*) Iſtor. della Generaz. p. 2. c. 5. n. 21.

a tinge of a deep yellow: notwithſtanding a great quantity flow'd out of it, when cut aſunder, a kind of tough fæces ſtill remain'd, ſimilar to thoſe which ſubſide at the bottom of wine.

One of the iliac arteries was, in ſome places, tortuous, in the ſame manner that we ſee the ſplenic to be: and the ſurfaces of both theſe veſſels, internally, were almoſt rugous, and of a brown colour; except where one of theſe ſurfaces ſhow'd in one particular part, a little whitiſh ſubſtance, of the hardneſs of a ligament, not yet bony.

The bulb of the corpus ſpongioſum urethræ, which is generally black internally, and externally, from the ſtagnation of blood therein, contain'd none at all in this ſubject; which I do not remember to have ſeen elſewhere; ſo that the cellules of it, which were open enough in other reſpects, were only half-red, and of a fleſhy colour.

One of the teſtes was in its natural ſtate, except that, betwixt itſelf and the epididymis, it had a thin flap of fat interpos'd; whereas the man was not at all fat in other reſpects.

But the other was ſurrounded with ſuch a quantity of water, of a very yellow colour, that no fibres any more appear'd through the tunica erythroides; that is, in conſequence of this being diſtended by the tunica vaginalis; which was not only diſtended itſelf alſo, but extended its cavity to the height of three inches above the upper part of the teſticle; though always decreaſing in its width, the higher it reach'd: the teſtis was indeed ſound; but ſo produc'd in length, that it ſeem'd to have caus'd a diſtraction in the fibres of the epididymis, which was connected thereto.

Near to the larger globe of this epididymis, a roundiſh corpuſcle was prominent from the albuginea, that ſeem'd to be made up of the ſubſtance of this coat. The faſciculus of the ſpermatic veſſels was much thicken'd indeed; but was made up, in the greater part of it, of a yellowiſh fat.

23. In this, and other obſervations, which I am about to point out, or produce, do not be ſurpriz'd, that, tho' there was a great quantity of water, or at leaſt not a little, within the tunica vaginalis; yet there was often but one corpuſcle, and that not large.

For it might be the remains of a large hydatid, one which had, for a conſiderable time, diſcharg'd water; although it had at length, for a long time paſt, contracted itſelf into that ſtate of ſmallneſs: and if there had been any ſimilar corpuſcles beſides, they might, ſometimes, have intirely vaniſh'd away.

Having given you this admonition, I will not only call back to your memory, the old man of whom I wrote in the fortieth letter (*l*); in whoſe tunica vaginalis, on one ſide, was a turbid water, in conſiderable quantity, and a roundiſh corpuſcle, of the ſame colour with the albuginea, was prominent, near to the larger globe of the epididymis; but I will furthermore add, on this occaſion, two other hiſtories; one of which confirms that there may be, at the ſame time, many corpuſcles, and the other ſhows, by what means they may ſometimes eſcape the eyes of the diſſecter.

24. An old man, whoſe occupation had been that of huſbandry, was carried off, in this hoſpital, by a dropſy of the thorax, at the time I was about to

(*l*) N. 22. vid. & epiſt. 64. n. 7.

begin the buſineſs of teaching anatomy publicly; that is in the month of January, in the year 1731. His body was therefore brought into the theatre, and diſſected in the proper order; notwithſtanding I ſhall here alſo, as I did in the herdſman, deſcribe thoſe parts in the laſt place, that were firſt examin'd.

After the water was exhauſted from the thorax, the lungs were found to be flaccid, and much diſeas'd. But not to the heart.

When the abdomen was laid open, beſides thoſe things relating to the appendicula vermiformis, the valvula Bauhini, the liver, and the ſpleen; which are ſufficiently explain'd in the fourteenth anatomical epiſtle (*m*), and which there is no occaſion to repeat here; the trunk of the great artery was found to be unequal here and there, in ſeveral parts of its internal ſurface; being either become quite bony, or inclining thereto.

And of the branches of the cæliac, that which runs up on the fundus of the ſtomach, was univerſally diſtorted in a ſurprizing manner (which I never ſaw before) as if into the form of criſp'd, or frizzled hair, frequently inflecting itſelf backwards.

The urinary bladder being contracted greatly into itſelf, thicken'd, and indurated, gave a reſiſtance to the air which was blown into it; and could not be dilated thereby. Internally it was ting'd, round about, with a bloody redneſs; as if from inflammation; but principally at the lower part: where, from the middle of the very circumference of the orifice of the urethra, from the internal, and at the ſame time, poſterior ſurface, a protuberance was prominent within the bladder, of the ſhape and magnitude of a middle-ſiz'd grape.

And this protuberance, although itſelf was there red, from the diſtention of the ſanguiferous veſſels, was nevertheleſs made up, internally, of a white and compact ſubſtance, into which the proſtate gland was evidently produc'd.

Finally, one of the teſtes was ſmall, and contain'd within a great quantity of water; which had, in part, concreted into icy lamellæ, by the force of the cold. This water was contain'd within the tunica vaginalis. And from the albuginea; both where it inveſted the teſticle, near to the larger globe of the epididymus, and where, producing itſelf, it cover'd this very globe; from each place, I ſay, a corpuſcle was prominent; ſo that the two were very near to each other: and theſe were made up of a denſe and hard ſubſtance.

25. A man, who had fallen from a high place, about the beginning of April in the year 1740, broke the bones of his head and thorax; as I ſhall write in a future letter (*n*). But at preſent, as he labour'd under a hydrocele on both ſides of the ſcrotum, I will take this occaſion to tell you what I ſaw in both places.

The *tunicæ vaginales* contain'd a limpid water: but not both in an equal quantity. For the cavity of one was either nothing, or but little, extended beyond its natural bounds: yet the cavity of the other was produc'd quite to the upper part of the os pubis; being gradually more contracted indeed, but ſtill pretty wide, and interrupted with no cells, or fibres whatever.

Both the teſticles were ſound: although that which was contain'd in the

(*m*) N. 62. (*n*) Epiſt. 52. n. 34.

larger cavity, was conſiderably larger than the other. The ſmaller had a ſmall tubercle, of the ſame colour with the albuginea, and fix'd to it, as if made up thereof, but not hard. The larger ſhow'd nothing of this kind. But as I happen'd to obſerve that, while the water which had ſurrounded it, was diſcharg'd, a little body, of ſome kind or other, had come out therewith, I found, by looking into this water, a corpuſcle of the bigneſs of a ſmall grape, and of the ſhape alſo: except that this little body, inclining ſomewhat to the oval figure, had, in the middle of one extremity, a ſhort and ſlender neck as it were; ſo as to reſemble a very ſmall bottle, or if you pleaſe a grape ſtill furniſh'd with a ſtalk: and that of the ſame ſubſtance with the grape.

And indeed this corpuſcle ſeem'd to have adher'd, to ſome part, by this its neck, or ſtalk; and being ſhaken off, from ſome cauſe or other, to have fallen into the water, where it might eaſily have eſcap'd obſervation. The ſubſtance whereof it conſiſted, internally, and externally, was white, denſe and compact; if you except a very ſmall part of an irregular figure, which occupied the middle place, and ſeem'd to be a kind of nucleus. For this part was yellowiſh, and almoſt of a bony hardneſs; whereas every other part, when preſs'd betwixt the fingers, gave way in ſome meaſure.

26. It does not eſcape me, what you may principally object againſt thoſe things, which I ſeem to myſelf to be at liberty to conjecture, from the obſervations that I have given you; and this even in dependance upon ſome of my own obſervations, which you have receiv'd at other times. For I very well remember, that in the twenty-fourth (*o*), the forty-firſt (*p*), and the forty-ſecond (*q*), letters, I have deſcrib'd teſticles, wherefrom a roundiſh corpuſcle was prominent, or even pendulous, which to me was a proof of an hydatid having been ruptur'd; whereas the tunica vaginalis, nevertheleſs, ſometimes contain'd a little water only, ſcarcely any at other times, and even none at all at ſome times.

And againſt theſe obſervations, I am ſo far from being willing to make uſe of any ſubterfuge, that I am, moreover, willing to add others of the ſame kind to them; and then, at length, declare, why none of them is any inſuperable objection to my conjectures.

27. Another man died in the hoſpital, a few days after we had diſſected that body, of which I ſpoke laſt: he had been brought thither, under the moſt violent ſymptoms of an incarcerated hernia, as it is call'd; and too late for any aſſiſtance to be given him.

As I was abſent, our Mediavia diſſected the body: who, on the very ſame day, and ſoon after, related what he had ſeen; and, at the ſame time, took care that ſome parts, which I deſir'd to examine myſelf, ſhould be brought to me. Take firſt then what he related to me, that you may add it to what has been ſaid above of the enterocele; and after that I will tell you what I obſerv'd in reſpect of the hydrocele.

The ſacculus of the hernia, being confin'd beneath the cremaſter muſcle, and the tunica erythroides, annex'd thereto, had the ſpermatic veſſels, and the teſticle, behind it. In the ſacculus, the duplicated portion of the inteſtine ileum was ſlightly connected thereto; in ſuch a manner that it could be ſe-

(*o*) N. 16. (*p*) N. 18. (*q*) N. 11.

parated

parated with the fingers: yet could it not be thruſt back into the belly, by reaſon of the narrowneſs of the ring, and the dilatation of the inteſtine, from the included matter.

The ring was of a blackiſh colour, as the inteſtine was alſo; and not only within the ſacculus, but even within the belly likewiſe, to the extent of half an ell. The reſt of the inteſtines were not turgid, although the abdomen had been ſomewhat tumid in the living body. He was prevented, by the very filthy ſmell of the body, from touching any other parts of it, beſides what he knew were expected by me.

The cranium being open'd, he obſerv'd the veſſels of the meninges to be much diſtended with blood, and an extravaſation of ſerum. What I obſerv'd in the meninges, it is not the place to ſpeak of here.

It is proper only to ſpeak of ſome things, which I ſaw in one of the teſticles that was brought to me, and in its proper membranes, wherein it was even then included.

Within the tunica vaginalis, was contain'd a water of a ſlight yellow colour, but in ſo ſmall a quantity, as not to exceed a third part of a ſpoonful. Nevertheleſs, from the tunica albuginea, where it inveſted almoſt the upper part of the teſticle, which was in other reſpects ſound; as the other parts that I examin'd likewiſe were; a roundiſh corpuſcle was prominent, which was of the ſame colour with the coat itſelf, and ſeem'd to be made up of the ſame ſubſtance.

28. A man who was a native of Trent, of a tall ſtature, but not large in his bulk, died of a diſeaſe, which I have already given you an account of in a former letter (*r*); as I alſo have of a ſmall bone being found in his heart; and of frequent bony laminæ in the great artery, (although in a curſory manner) for which reaſon I ſhall not repeat the relation here. I will rather add two things that I obſerv'd beſides, in diſſecting his body; in the month of March of the year 1717; that you may have his hiſtory as perfect as poſſible.

The ventricles of the heart, and the large veſſels, were not without polypous concretions; and thoſe large, and denſe bodies, and ſuch as, if you attempted to draw them aſunder, gave a conſiderable reſiſtance: and yet ſo great a quantity of fluid and black blood, overflow'd in every part of the body, that it was often the occaſion of great hindrance, and trouble, in the diſſection.

In one part of the ſcrotum the tunica vaginalis did not contain a great quantity of water. But the ſurface of the albuginea, which was much thicken'd, was beſet, here and there, with corpuſcles of the ſame colour with that coat; of the ſhape of very ſmall glands; hardiſh in their ſubſtance, and, in ſome places, diſpos'd almoſt into the form of a quincunx.

29. The body of a man, who was ſaid to have died of a kind of pleuriſy, was brought into the college, when I was teaching anatomy there, about the end of January, in the year 1750.

The thorax being open'd, a real complication of diſeaſes was found therein. For there was a great quantity of water both in the cavities of the thorax, and of the pericardium: the lungs, and particularly on the left ſide, were in great

(*r*) Epiſt. 3. n. 22.

meaſure

meaſure affix'd to the pleura; and in ſome places a little hard: among thoſe glands which are at the firſt diviſion of the bronchia, was one of more than an inch in length. I purpoſely omit here, what I ſhall ſay with more propriety on another occaſion; I mean that the triangular muſcles of the breaſt were almoſt wholly deficient; and this from the original formation: and that, from the ſide of one of the fibulæ internally, at its upper part, a bony proceſs, very ſimilar to the ſtyloid, had been prominent.

But I will not omit theſe things, for the ſake of which I began, principally, to write this obſervation. The common coats of the teſtes being taken off, under that coat which is properly call'd the ſcrotum, I ſaw more fat, and even at the lower part, than I ſhould have expected; particularly in a man who was not very fat in general: and when I cut into the other coats on one ſide, I did not obſerve any moiſture to flow from the cavity of the tunica vaginalis: yet the included teſticle had, near its upper extremity, a ſmall rediſh excreſcence, prominent from the tunica albuginea.

30. After what I have already ſaid, it is to no purpoſe to add the circumſtance of the young man, of whom I ſhall ſpeak, in treating of the wounds of the thorax (*); and much leſs of the man whoſe hiſtory I ſhall give, when upon the ſubject of the gonorrhœa (s); although the former of theſe had in one teſtis, near to one of the globes of the epididymis, a ſmall, rediſh, and ſoft, excreſcence of the albuginea, as it were; and the latter a roundiſh tubercle, at the upper part of the epididymis; yet neither of them had any larger quantity of moiſture within the tunica vaginalis, than may be ſeen even in the moſt healthy man.

For now it ſufficiently appears, from the preceding hiſtories, that not only when one corpuſcle was preſent, and even when many were obſerv'd, there was no great quantity of water in the tunica vaginalis; but alſo that there was none when a rediſh excreſcence was ſtill prominent: though this excreſcence, not long ago, was conſider'd, by me, as the token of an hydatid being ruptur'd.

Notwithſtanding this is the ſtate of the queſtion, as there is nothing which forbids us to conceive, that the hydatid lately ruptur'd was very ſmall, and that ſome, or many corpuſcles, are the traces of old hydatids; and finally, that the orifices of the abſorbent veſſels; as in the tunica vaginalis of ſome perſons, they are very few in number or obſtructed, for which reaſon the extravaſated water is long preſerv'd in them; may on the contrary exiſt in other bodies in a very great number, and be more open; ſince therefore we are at liberty to conceive theſe things; I do not ſee that there is ſufficient reaſon to oblige us intirely to ſet aſide thoſe former conjectures.

But be this as it will; from reading the obſervations that I have now propos'd, and from turning back to thoſe which I have refer'd you to, you will gather that hydatids, excreſcences, and corpuſcles, have occur'd to me, for the moſt part, at the upper extremity of the teſtis; and even near the larger globe of the epididymis: and that when they were prominent in both the teſticles, they occupied the ſame place in both very frequently; and indeed that the hydatid, of which I have taken notice above (t), as reſembling the

(*) Epiſt. 53. n. 40. (s) Epiſt. 44. n. 5. (t) N. 3.

teſtis

teſtis in figure and magnitude, was even form'd thereupon, or at leaſt very near to it; as far as the delineation ſeems to ſhow: which things are, perhaps, not unworthy of obſervation, as their cauſes may probably be inquir'd after, in the very near inſertion of the faſciculus of the ſpermatic veſſels.

But I ſuppoſe you will rather inquire of me, whether I never found the hydrocele any where elſe, but betwixt the tunica vaginalis and albuginea. And I will immediately explain to you, how it appears to me, that I ſaw it once, in the tunica albuginea itſelf.

31. An old man, who had fallen from a high place, in the month of March in the year 1706, died of a blow on his head receiv'd by the fall; for which reaſon you will have the remaining part of his hiſtory, when I treat of thoſe blows (*u*); at preſent I ſhall only give you an account of what relates to the double hernia, under which he labour'd in one ſide of the ſcrotum only, and in the right.

The omentum, which was drawn towards the right ſide, even in the cavity of the belly, deſcended from thence into a ſacculus, which was carried down at the ſide of the faſciculus of the ſpermatic veſſels; but not extended beyond the upper part of the teſticle. Internally it was ſmooth; and from thence the omentum was very eaſily brought back into the cavity of the belly.

The other hernia appear'd in the following manner. There was another ſacculus much leſs than the former; that is to ſay not longer than the teſticle, yet ſufficiently wide; conſiſting of a ſmooth and ſeparable membrane, and containing a yellowiſh water. This ſac ſurrounded much the greater part of the teſticle, in conſequence of having its ſides cloſely join'd, on one hand, and on the other, with that part of the back of the teſticle, which was on each ſide, plac'd neareſt to the epididymis longitudinally; ſo that this ſmall part was wholly on the outſide of the ſac.

32. As I have, more than once, ſeparated the tunica albuginea into two membranes, by an eaſy, and equable diviſion (*x*); and as I ſee, that the celebrated Teichmeyrus (*y*) very freely increaſes this ſeparation, and affirms "that it may be divided into three evident coats;" I ſhould ſuppoſe that this leſſer ſacculus was made up of two of them, by the interpoſition of water: which kind of hydrocele is, as far as I know, not obſerv'd by any other author; unleſs you, perhaps, ſuppoſe it to have been hinted at by our Fabricius (*z*).

But that ſpecies of this diſorder, which men, in other reſpects learned, aſſert to be very frequent; and which I acknowledge, not without a method of cure, in that introduction (*a*), which is ſo ancient, as to be aſcrib'd to Galen; that ſpecies, I ſay, has not ever occur'd to Valſalva, nor to me, nor to the very experienc'd Heiſter (*b*).

Yet I would not, for this reaſon, deny, that it has even been ſeen very frequently by others, who, without doubt, much more frequently deſcribe water as ſhut up within the membranous cells, that are above the tunica vaginalis, than as extravaſated within this cavity.

(*u*) Epiſt. 52. n. 8.
(*x*) Adverſ. 4. animad. 1.
(*y*) Vindic. quorund. invent. in fine.
(*z*) Pentateuch. Chir. l. 1. c. 27.
(*a*) C. 18.
(*b*) Diſſert. de Hydroc. n. 28. & Inſtit. Chir. p. 2. ſ. 5. c. 122. not. *b* ad n. 1.

It

It is long ago, that others, and among theſe Gerard Blaſius (*c*), have admoniſh'd us, that this coat "does not extend itſelf beyond the teſtis; and "that the ſpermatic veſſels are not cover'd with any looſe tunica vaginalis: "..... but that, inſtead of this, a great number of membranes are given, "which are condens'd together, and by this means connect theſe veſſels:" when the peritonæum, therefore, is ruptur'd in the groins, there is, ſays he, "no paſſage allow'd, for any thing to flow down from the belly, to this "ſpace; that is into the cavity of the tunica vaginalis; but, in fact, be"twixt this coat, and the ſcrotum itſelf:" that is into the cells which lie betwixt the two, and communicate with thoſe ſuperior cells, either naturally, or from the effect of diſeaſe.

All theſe opinions are follow'd by many now, nor do I deny them; nor yet what they add, I mean that by the weight, or acrimony, of the humour collected in thoſe ſuperior cells, that kind of membranous ſeptum, which is interpos'd between the cavity of the tunica vaginalis, and thoſe cells, may ſometimes be ruptur'd, or eroded; and the humour, by this means, be pour'd out, at length, into that coat: and thus one continued cavity will be produc'd; that is to ſay, of the tunica vaginalis, and the ſpace which thoſe upper and diſtended cells occupied.

In this manner they will probably explain that obſervation of mine (*d*), of the vaginal cavity being produc'd quite to the os pubis; and indeed I ſhall not be very obſtinately repugnant to ſuch an explication: although I do not very well underſtand, how it agrees with that, which not only is allow'd by others, but by themſelves alſo; I mean that the hydroceles, like other ſpurious herniæ, "ſeem to increaſe, as they aſcend upwards towards the groins;" contrary to what the true herniæ do, which "increaſe as they deſcend towards "the teſtis."

But if they alſo explain, after the ſame mode, another obſervation of mine (*e*) on the herdſman; the cavity of whoſe tunica vaginalis aſcended three inches above the teſticles; or even ſome of that great number, wherein this cavity being not more produc'd upwards than uſual, contain'd more or leſs fluid; it will be ſurprizing that not any one cell was ever left above the tunica vaginalis, that I have ſeen to be diſtended with a fluid: and even that when this ſeptum is not ruptur'd, the humour has nevertheleſs paſs'd into the tunica vaginalis; of which they deny the poſſibility.

Wherefore, if I am to relate, with faithfulneſs, only thoſe things that I have ſeen (according to my uſual cuſtom) in this place alſo; I have no where ſeen a fluid collected in the ſcrotum, except in the cavity of the tunica vaginalis; if, beſides the old man of whom we laſt ſpoke, you except the aſcitic patients, in whom, however, it was ſeparated into thoſe ſmall cells that are immediately under the ſkin, as has been explain'd in the thirty-eighth (*f*) and forty-firſt letters (*g*).

33. This hydrocele of aſcitic patients, which they rather call a dropſy of the ſcrotum, it is by no means neceſſary to account for, with the vulgar, from that water wherewith their belly is diſtended; as the ſame cauſes, from whence the water then very often ſtuffs up the reſt of the cells that lie under

(*c*) In Obſervatis, ſupra ad n. 8. citatis.
(*d*) Supra n. 25.
(*e*) Supra n. 22.
(*f*) N. 26.
(*g*) N. 18.

the ſkin, may very eaſily cauſe them to be fill'd in the ſcrotum likewiſe; and that ſo much the more eaſily, as this part is pendulous, and endow'd with but little muſcular ſtrength.

Yet I ſhall not deny that, ſometimes, by the great quantity of water, which forces againſt the peritonæum, this membrane may be ſo impell'd within the ſcrotum, that if you perforate this part, the water, deſcending thither from the belly, may burſt forth with great impetus; as that very ingenuous man Benevoli (*b*) relates that he had ſeen.

And as he ſays that the ring of the abdomen was then ſo dilated, as to be able to admit a fiſt; it affords me a handle for putting you in mind, that it is not allowable to make uſe, or at leaſt always, of a certain ingenious explication of the origin of the true hydrocele, in patients who have an aſcites, "from the oblique muſcle being too much ſtretch'd," on account of the tumour in the belly; "and its orifice being by this means made narrower;" that is to ſay, the oblong fiſſure which is generally call'd the ring, from whence the ſpermatic veins, which paſs that way, are compreſs'd.

34. However, the preſſure of thoſe veins is, ſometimes, to be eaſily accounted for, rather from the very great weight of the incumbent waters, while they paſs under the peritonæum; and how much effect this preſſure may have, in producing a hydrocele, I would ſhow, if there were occaſion, by the example, in particular, which you will read in the writings of the celebrated Baſſius (*i*), I mean an example of a large hydrocele, which follow'd the uſe of a bandage, that very cloſely and ſtrongly compreſs'd the groin; and that in a ſhort time after.

Yet I knew an old phyſician, who, in order to intercept a defluxion of humours, as he call'd it, to a tumour of the teſticle, which was already conſiderable, had order'd aſtringent medicines to be applied to the groin; as if it were in the power of theſe applications to aſtringe the artery, that carried in the blood, and yet this without aſtringing the veins, and the lymphæ-ducts, ſo much the more in proportion, as their coats are more infirm.

When the apothecary who conſulted me had heard theſe things from me; for the patient I ſpeak of was an apothecary; he immediately remov'd theſe applications: and the other remedies made uſe of were of more advantage afterwards. And to omit the other cauſes here, let us conſider only the ſpermatic veins in an hydrocele, and moſt other ſpurious herniæ; for theſe are, of themſelves, ſufficiently prone to generate, and increaſe, theſe diſorders, whether you attend to their poſition, or their very great length, from their beginning quite to their end; or the more inert blood which they bring back, in conſequence of its being depriv'd of its more thin, and active, particles in the teſtes; or the remarkable ſmallneſs of their fellow-artery, and its very long courſe; or the weakneſs of the cremaſter muſcle that lies upon them; or, finally, the valves in the veins themſelves being few, or none at all; or perhaps unequal to their offices; as appears from injections made towards the teſtes: particularly in thoſe who have dilated theſe veins, by being too intent upon venery, or venereal ideas.

(*b*) Diſſertaz. 1. (*i*) Dec. 1. Obſ. Anat. Chir. 9.

From theſe cauſes then, which are ſufficiently allow'd of by learned men, and yet which are requir'd for a proper ſecretion of the ſemen, theſe veins are ſo far fitted to bring on thoſe diſorders that I have refer'd to, or increaſe them; that if an intemperance of venery be added, if a compreſſion, or a blow, or any thing elſe take place, from whence the motion of the blood, through theſe veſſels, may be more retarded, theſe diſorders may eaſily be the conſequence; not to ſay that if theſe circumſtances are not avoided, they may be increas'd.

And I even ſee, that, from this retardation, the explication of an obſervation, of Dodonæus, is deduc'd by a very learned writer; which obſervation is even related in the Sepulchretum, in the next ſection (*k*), and quoted in this (*l*); that is to ſay, of a hydrocele, when it is from an internal cauſe, always occurring in the left part of the ſcrotum; or, at leaſt, as Hildanus (*m*) has contracted that obſervation, "for the moſt part."

For as to what they took notice of, in regard to the left ſpermatic vein; as if it could carry the ſerum into the ſcrotum, from the neighbouring kidney; though it has no place in our conſideration at this time, yet this is very well ſubſtituted in its room: that the blood is not carried back with eaſe and expedition, from that vein, into the emulgent.

But as to the example which is produc'd to explain the impediment; as, for inſtance, if the neighbouring kidney labours under calculi, ſand, and ulcer; and a very ſmall calculus be carried from the ulcer, with the blood, into the emulgent veins, and from this fall into the ſpermatic, and diſturb the reflux of the blood from the teſtes; this example, I ſay, is ſo rare in an hydrocele, that he who propoſes it does not diſavow, and even requires from others, a more probable cauſe of this very frequent circumſtance; I mean of that which appears from his obſervation, at leaſt, that this diſorder, occurs "far more frequently" in the left, than in the right ſide of the ſcrotum.

But to me it ſeems that no other cauſe need be inquir'd after here, than that which has been already acknowledg'd; agreeably to the opinion of ſome of the moſt learned men (*n*); from whence the left kidney is more ſubject to calculi, than the right.

For as the blood is not carried ſo ſpeedily, and expeditiouſly, into the vena cava, through the left emulgent vein; in conſequence of its being longer, and lying tranſverſly over the great artery; as it is through the right; and the left ſpermatic vein does not, like the right, open into the cava itſelf, but into that left emulgent; it appears pretty clearly, that where the blood is equally prone to ſtagnation, in both the ſpermatic veins, it will nevertheleſs more eaſily happen that it ſtagnates in the left; or at leaſt aſcends more ſlowly; than in the right.

Nor ſhould I aſſign any other reaſon, why the cirſocele "almoſt always affects the left ſide," according to the obſervations of Arantius (*o*): though, at the ſame time, I leave it entirely undetermin'd of theſe, as I do alſo of thoſe that I mention'd above of the hydrocele, whether they anſwer equally with other obſervators. For it would be neceſſary that a greater number of

(*k*) Sect. 30. in Schol. ad obſ. 1.
(*l*) In Schol. ad §. 3. obſ. 21.
(*m*) Cent. 4. Obſ. Chir. 66.
(*n*) Epiſt. 40. n. 12.
(*o*) De Tumor. p. n. c. 51.

obſervations, of moſt of theſe obſervers, ſhould be collected, in regard to this circumſtance, in both the diſeaſes; and in thoſe that Valſalva and I have made, it unfortunately happens to have been but very ſeldom remark'd, on which ſide the obſervations were made.

35. But before I add a few things of the cirſocele, I ſhall hint ſtill fewer things of the pneumatocele, and of the hæmatocele, as the order propos'd (*p*) requires. For this laſt I have never ſeen, as it is ſeldom of long continuance like the reſt.

For when blood, either from a wound receiv'd, or from any curative method, has flow'd down into the ſcrotum, ſurgeons immediately open a paſſage for its removal; following, therein, not only the precept of Celſus (*q*), but of reaſon itſelf. Yet ſometimes from the eroſion of the membranes of the teſticle, "a remarkable quantity of bloody ichor" diſtends the tunica vaginalis; ſo that when this membrane is incis'd, "it burſts forth with impe-"tus," as I find in Juſtus Schraderus (*r*).

But if we take the word pneumatocele in ſuch a ſenſe, as to ſuppoſe it owing to air being included in ſome inteſtine, which has deſcended into the ſcrotum; a remarkable example of which kind has been produc'd by the celebrated Haller (*s*) in particular; I have perhaps in ſome meaſure ſeen it: but if from air diſtending the cells of the ſcrotum, in which manner moſt authors underſtand it, I do not remember to have read that any one has ſeen this, without an emphyſema, of all the other parts, or moſt of them; or, at leaſt, as you have it in Palfin (*t*), of the parts neareſt to the ſcrotum. How it appear'd to me in the ſcrotum alone, in a body already dead, you have in the fifth letter (*u*).

36. The cirſocele is the only one of all the different ſpecies of herniæ, that Cornelius Celſus has given the name of *ramex*, or *ramices*, to; whether it occupies the ſcrotum; and that either externally or internally; or, at length, whether it only fill the groin: and as he propoſes this order not in the ſeventeenth, but the eighteenth chapter, of the ſeventh book; ſo he follows it, by treating of the cure, in chapter the twenty-ſecond, and twenty-fourth.

And this remark I was willing to make, leſt, like a man in other reſpects very ingenious, you ſhould be in ſome doubt about the term *ramex* in Celſus; and this his laſt chapter ſhould ſeem obſcure to you: in which it is true he gives us the method of cure in the bubonocele, as the concluſion of the eighteenth chapter teaches; but of a bubonocele which has its origin only from varicous veins.

Juſtus Schraderus is obſcure; whom I the more readily mention to you, becauſe I ſee that his obſervations are omitted in the Sepulchretum. For in that very obſervation which is pointed out a little above (*x*), wherein he ſpeaks of a certain hydrocele, he aſſerts that there were alſo "innumerable flexures "of creeping veſſels immoderately turgid;" but whether "on the ſurface" of the teſticle, or the tunica vaginalis, is uncertain from what he ſays: for

(*p*) N. 15.
(*q*) De Medic. l. 7. c. 19.
(*r*) Dec. 2. Obſ Anat. Med. 1.
(*s*) Ad Prælect. Boerh. §. 641. not. *u*.
(*t*) Anat. du Corps Hum. p. 1. tr. 2. ch. 18.
(*u*) N. 19.
(*x*) N. 35.

that

that theſe appearances may be in either place, Celſus has taught us in the eighteenth, and twenty-ſecond chapters, already quoted.

Moreover, as in the obſervation of Schraderus, ſo I obſerve, that it has frequently happen'd in others likewiſe, that herniæ of different kinds were join'd with the cirſocele. Turn to Horſtius whom you have here in the Sepulchretum *(y)*. And even read over again the paſſages of my letters, wherein this hernia is deſcrib'd, as it was ſeen by Valſalva, or by me.

The firſt-mention'd author (*z*), having ſeen, according to the firſt mode of Celſus *(a)* " the varicous veins ſo entangl'd with each other, upon the ſcro-" tum itſelf," as to reſemble a chain; found a hydrocele at the ſame time. And I having, according to the laſt mode of the firſt diviſion of Celſus (*b*), found an incipient cirſocele in the butcher *(c)*, or a compleat one in the potter (*d*); I, at the ſame time, found in this laſt, the beginning of a hydrocele; and in the former a compleat hydrocele.

Beſides, the ſubſtance of the teſtis was ſo compact in the potter, that it ſeem'd, as Celſus ſays upon that mode of diſeaſe *(e)*, " to have loſt its nou-" riſhment;" and had a very ſmall bony body lying beneath it: and this brings back to my mind, another particular obſervation of Valſalva, which was made on I know not what man.

For in the right faſciculus of the ſpermatic veſſels, he found a bony body within peculiar little membranes: which, when he preſs'd it betwixt his fingers ſtrongly, he ſaw to be made up of two bones. Both of theſe were of a globular figure; but one of the bigneſs of a grain of millet-ſeed, the other of the bigneſs of a vetch; the latter in part roughiſh, but the other elegantly ſmooth, or poliſh'd, like pearl.

However, Arantius (*f*) obſerv'd theſe things of a cirſocele, deſcribing a very large one I ſuppoſe: " the veſſels offer themſelves to the touch in ſo-" turgid a ſtate, as to equal a finger in thickneſs; being wrap'd up in cir-" cles, and folds (after the manner of the inteſtines) which in part diſappear " when the patients lie down, are diminiſh'd and become leſs troubleſome, " in the winter-ſeaſon, when the ſcrotum is contracted; but are exceedingly " ſo in the ſummer."

37. The ſteatocele is, with the ſame author (*g*), " where a certain adipous " humour concretes in the ſcrotum, and about the teſtis." And he has follow'd the ancient writer of that introduction, which is preſerv'd among the books of Galen; which writer having, in the ſeventeenth and eighteenth chapters, mention'd the ſteatocele among other herniæ, ſpeaking of the cure, in the laſt-mention'd chapter, ſays that " the fat muſt be remov'd."

But whether we chooſe to call it a ſebaceous matter, or fat; whatever of an unctuous nature is ſometimes form'd within the ſcrotum, and diſtends it, that is certainly either collected under the ſkin itſelf, or in the internal cells.

To the firſt kind belongs that of which I have ſaid above *(h)*, that I had ſeen, under the ſcrotum properly ſo call'd, more fat, and even at the lower

(y) L. 3. ſect. 29. obſ. 17.
(z) Epiſt. 20. n. 24.
(a) L. 7. c. 18 & 22.
(b) Ibid.
(c) Epiſt. 21. n. 19.
(d) Epiſt. 7. n. 11.
(e) Cit. c. 18.
(f) C. ſupra ad n. 34. cit.
(g) Ibid.
(h) N. 29.

part,

part, than I ſhould have expected; particularly in a man not very fat: for there is no fat in that part, or at leaſt but very little; and this only ſometimes.

But that was a kind of beginning only of this diſorder; which you ſee compleated in this twenty-ninth ſection of the Sepulchretum (*i*), from de Graaf: and to the ſame claſs, probably, is to be referr'd that which is to be read of, in the ſame place (*k*), in the obſervation of Horſtius already taken notice of: "an adipoſe fleſh in the right part of the ſcrotum."

And to the internal cells belongs that which, as was ſaid above (*l*) for another reaſon, was found by the celebrated Petſchius (*m*) in a body that was very fat; when that which ſeem'd to be an enterocele, or epiplocele, in one ſide of the ſcrotum, was nothing but "fat collected in the cellular ſubſtance "of the peritonæum, and paſſing down through the rings to the ſcro-"tum."

Thus, in Boerhaave (*n*), you will read that a very large tumour was ſeen by him in the ſcrotum; for in a fat man "the luxuriant fat had paſs'd through "the ring into the ſcrotum, with the ſpermatic veſſels; the teſticle being "quite ſound and free."

And Schulzius (*o*) ſeems to have found "a large quantity of fat" not below the groin, and on the right ſide, a much leſs quantity being on the left, and "cloſely interwoven" with theſe veſſels; ſo that, at firſt ſight, it reſembl'd an inteſtine, or the omentum, prolaps'd thither: and that in a carcaſe rather lank and thin, as you will remember to have been related by me before (*p*), in order to illuſtrate a different circumſtance.

To me, however, who know that I have ſometimes ſeen fat interpos'd, here and there, betwixt theſe veſſels, even in a lean body, from the upper part of the tunica vaginalis quite to the ring; for I particularly obſerv'd this tract at the time; and that in a very brawny man, by no means fat, who was kill'd when in perfect health, I not only found fat in the lower part of the ſame veſſels, but alſo betwixt the epididymis, and the teſtis; and finally, that in the herdſman, ſpoken of in this letter (*q*) (who was not fat likewiſe) where the thicker faſciculus of them, which belong'd to one teſtis, was made up of fat in its greater part, fat was not wanting betwixt the other teſticle and its epididymis (which circumſtance, although, as far as I remember, not taken notice of by anatomiſts, is perhaps not uncommon); to me, I ſay, it does not ſeem ſo ſurprizing, that fat has been, more than once, found immoderately increas'd in the faſciculus of thoſe veſſels, as that it has never been found betwixt the epididymis and the teſticle; unleſs, perhaps, fat has been, at any time, taken for fleſh, in any kind of ſarcocele.

38. For the author of the "Introduction (*r*)" juſt now quoted, takes notice not only of red fleſh, but even of fleſh "of a whitiſh colour;" as compoſing a ſarcocele; and I myſelf, as I have ſaid in a former work (*s*),

(*i*) Obſ. 14. §. 2.
(*k*) Obſ. 17.
(*l*) N. 10.
(*m*) Syllog. anat. obſ. §. 89.
(*n*) Prælect ad Inſtit. §. 712.
(*o*) Act. n. c. tom. 1. obſ. 225.
(*p*) N. 10.
(*q*) N. 22.
(*r*) C. 18.
(*s*) Adverſ. Anat. 2. Animad. 6.

have

have ſeen ſacculi of fat, which, as this fat was ting'd by ſtagnating blood being intermix'd with it, reſembled fleſh.

Moreover, in regard to the nature of this hernia, and its ſituation, different phyſicians have entertain'd different opinions; and thoſe immediately repugnant to each other. For Veſalius, as you will learn from the Sepulchretum (*t*), had perſuaded himſelf that it conſiſted of the omentum prolaps'd into the ſcrotum.

Some have thought that it did not differ from the tumefaction, and induration, of the teſticle. But the others; although they do not deny that leſs cautious obſervers may ſometimes be impos'd upon by the firſt of thoſe diſorders, ſo as to take it for a ſarcocele; by this name, nevertheleſs, underſtand a fleſh really growing out about the teſticle, and its veſſels, or ſome other ſubſtance of that kind.

Yet this ſeems to happen "very ſeldom," as Celſus (*u*) has admoniſh'd us; or at leaſt leſs often than is generally ſuppos'd; if we look for obſervations which are not liable to doubt: and perhaps Olaus Borrichius does not ſeem to have wander'd far from the truth, when he remark'd, upon his own obſervation, as you have it in the Sepulchretum (*x*), "that a ſarcocele is "not ſo frequently form'd upon the teſtes, as in them:" where he has alſo ſhown how a hydrocelele may ſometimes reſemble a ſarcocele; ſo that, perhaps, it was the former, and not the latter, which they believe to have been taken away by the powder of the root of ononis or reſt-harrow; which certainly increaſes the quantity of urine.

He has, therefore, prudently attributed ſo much to that opinion, which I mention'd in the ſecond place, as, nevertheleſs, expreſly to leave room for the third alſo, for which he ſhows, that the examples, in Lotichius, and Hildanus, argue. Looking for theſe examples, I eaſily found them in the ſixth of the Conſilia of the firſt-mention'd author (*y*), and in the fourth Centuria of the obſervations of the latter; and wonder'd that nothing was transfer'd into this ſection of the Sepulchretum, from the ſixty-fifth obſervation of this author.

But if thoſe things which were thoroughly examin'd by anatomy were ſought after; there was an obſervation of Blaſius (*z*), that might be refer'd to this claſs; in which, not as in that of Borrichius, the whole fleſhy maſs was nothing but the teſticle itſelf; but, on the contrary, the teſticle was contain'd, like a nucleus, in a thick cortex as it were, which ſeem'd to be made up of pretty hard glands.

I however, though I do not at all doubt, but a morbid fleſh may grow out from the coats of the teſtes, when eroded, from whatever cauſe it may be; as well as from the coats of other parts; have never yet lit on an appearance of this kind in diſſections.

But the celebrated Pohlius (*a*) has lit on ſuch an appearance, and has ſaid that a ſarcocele is, "according to his own obſervation, a fibrous and fleſhy "tumour of the teſticles; more or leſs hard and painful, and form'd by de-"grees; which either increaſes the whole ſubſtance of the teſticle, and con-

(*t*) Sect. hac 29. obſ. 15. §. 3.
(*u*) L. 7. c. 18.
(*x*) Sect. cit. Schol. ad obſ. 22. §. 1.
(*y*) C. 3. obſ. 9.
(*z*) 15. Partis 1.
(*a*) Progr. de Hern. & Speciatim de Sarcocele.

"verts

" verts it into a maſs like fleſh; or, at leaſt, growing to a part of it, forms a " kind of fleſhy excreſcence as it were."

Nevertheleſs you ſee, that he acknowledges it to be principally in the whole of the teſticle: and he produces an example of a ſarcocele diſſected by him, in which the ſubſtance of the teſtis, " had been univerſally chang'd " into a purulent matter."

And if you read thoſe obſervations, of that very experienc'd man Dieterius Sproegelius (*b*), wherein the hydrocele is join'd with the ſarcocele; as a cauſe, or as an effect; you will ſee that the teſticle was found to be " livid " and black, putrid," or " extended, hard, and, on the outſide, together " with the epididymis, corroded and callous;" or " partly friable by means " of putrefaction; but in part perfectly cartilaginous, and having the tunica albuginea alſo, together with the epididymis, univerſally cartilaginous;" or finally " tumid," and having, when it was diſſected, " a true yellowiſh thick " pus in the middle, with an eroſion and incipient calloſity of the parietes."

In no more than one obſervation (*c*), is it ſaid that " tumid and ſcirrhous " glands" were found;" but not in the ſubſtance of the teſticle: were they then upon the ſurface of the teſticle? Or in the ſpermatic rope? For in this they alſo acknowledge a ſarcocele, and do not at all treat of it, if it has enter'd into the belly, like that which I have deſcrib'd, as ſeen by Valſalva, beginning in the teſtis (*d*), and aſcending thither, like a hard tuberoſity, as if of a glandular nature, where it was join'd with a very large and ſimilar tumour of the meſentery.

But not to digreſs from the ſubject of ſarcocele, when enquir'd after in the teſtes themſelves, the obſervations of that illuſtrious man Heiſter (*e*) are excellent. This author found four teſticles ſuch as he delineates (*f*), all of them ſo immoderately enlarg'd, that he, with juſtice, refuted the opinion of thoſe (*g*), who have aſſerted that a ſarcocele " never exceeds a hen's egg in " its ſize."

He alſo found them all ſcirrhous, and of an equal ſurface; ſo that it was not without reaſon he affirm'd (*h*) " ſcirrhous teſticles to be far more frequent, " than excreſcences from the teſticles."

The remaining circumſtances you will ſee in this author himſelf; and among others, that one of thoſe teſtes (*i*) was " corrupted, and, in a manner, " cancerous." In the mean while, let us go on to the laſt of the herniæ enumerated by us.

39. By the name of ſpermatocele, the author of the twentieth obſervation, in this twenty-ninth ſection of the Sepulchretum, has underſtood a hernia, which is made by " the vas deferens being " corrugated, and going down " into the ſcrotum;" but very eaſily returning within the belly, either by the help of the hands, or a ſupine poſture of body.

Who this author was, I enquir'd, by looking under the obſervation, to no purpoſe; though I much wiſh'd it, that I might better be able to conceive his meaning. For under it is written *idem ibidem*; that is to ſay, either

(*b*) Obſerv. quædam ſelect. §. 50. & ſeq.
(*c*) §. 51.
(*d*) Epiſt. 39. n. 2.
(*e*) Diſſect. de Sarcocele.
(*f*) Fig. 1. & ſeq. cum explic.
(*g*) In Proemio.
(*h*) §. 37.
(*i*) §. 34.

Rolfinck.

Rolfinck, or Riolanus, or Hildanus, or Roſcius; for theſe had all been mention'd in the preceding ſcholia, and obſervation.

I knew, however, that thoſe were not the words of any of theſe authors: and it happen'd, by mere accident, at laſt, that, turning over Barbette's ſurgery (*k*), I lit upon theſe very words; and did not find any thing more than what is copied in the Sepulchretum.

It is certainly difficult to be underſtood, by thoſe who are not ignorant how the vas deferens is connected, by adhering to the bladder, and lying upon the ureter in its paſſage (from whence Rutty (*l*) accounted for the drawing up of the teſtis in nephritic pains) and finally, how it is tied down, by very frequent cellular membranes, to the neighbouring parts, not only above the ring of the abdomen, but beneath that alſo, quite to its origin; it is difficult, I ſay, to be underſtood, by thoſe who know theſe circumſtances, how this vas deferens can poſſibly deſcend ſo far into the ſcrotum, as to produce a hernia, by its being wrap'd up together there.

And as I do not remember that this has been ſeen by any one in diſſection; and as Barbette does not ſay that he ſaw it by theſe means; I think there is room to ſuſpect that what he ſays he had more than once ſeen, was quite a different thing from that which he has ſuppos'd it to be.

The ſpermatocele therefore; which, if it ſignified to me what it did to Barbette, ought to have been conſider'd above, in the number of the true herniæ; is retain'd among the ſpurious herniæ; and ſo underſtood, as to ſignify "a collection of ſemen in the teſticles," which ſometimes "raiſes them "up to a very great bulk:" and I uſe the words in which the compilers of the "Bibliotheca Anatomica (*m*), have propos'd this ſubject; requeſting that they might be allow'd to call herniæ of this kind, "ſpermatoceles:" for this ſignification, and ſtill leſs this word, was not lately made common among phyſicians, as a man, in other reſpects very learned, ſeems to imagine.

And indeed theſe compilers have affirm'd, that the caſe has been "more "than once" remark'd by them, in men of a very ſalacious diſpoſition, when there was "an obſtruction form'd in ſome part of the epididymis, from the "particles of the ſemen that are capable of concretion;" and that they had once ſeen the caſe, beyond all poſſibility of doubt, when, after the effuſion of the ſemen, thus confin'd, into the ſcrotum, an abſceſs having ariſen from thence, which was under a neceſſity of being open'd with the knife, this abſceſs, when cleans'd, did no more diſcharge pus; but from that part of the epididymis, which is in the middle betwixt the globes thereof, the ſemen, which had burſt through that part, by diſtending it, very evidently came forth.

But if you chooſe rather to attribute this foramen, of the epididymis, to the eroding matter of the abſceſs, than to the diſtending ſemen; you nevertheleſs cannot deny what is dictated by reaſon itſelf, if the paſſage of the ſemen, into its veſicles, be intercepted from any cauſe whatever; or if the return

(*k*) Part. 1. c. 7.
(*l*) Treatiſe of the urinary paſſages, ſect. 3. p. 1.
(*m*) Tom. 1. in adnot. ad Graaf. Tract. de Viror. Organ. & cæt.

of it, by the abſorbent veſſels, into the blood, from the veſicles that are already diſtended, be prevented; I mean that the teſticles themſelves, the epididymis, and the other receptacles of that fluid, will be ſo fill'd by the new ſemen which is continually ſecreted in the teſtes, that at firſt they become ſwell'd; at which time I will ſay that there is a ſpermatocele; then after this, that the very tender and ſoft ſtructure, which is peculiarly obſervable in the teſticles, will be, by degrees, vitiated: and the veſſels which carry the ſemen, blood, and lymph, being ruptur'd, at length tumours of a mix'd kind will be generated in the teſtes.

Now I will give proofs of theſe things from examples.

40. Some perſons, whoſe ilia were diſtended with flatus, have complain'd to me, not ſo much of a tenſion, and pain, as of one, or of both teſticles being for the moſt part tumid, in particular, when the flatus was moſt troubleſome; not the leaſt inconvenience remaining when the flatus was diſlodg'd.

I ſuppos'd therefore that the paſſage for the ſemen was ſhut up by the diſtention of the inteſtines; the veſſels that carry this to the *veſiculæ* being compreſs'd, and even the veſicles themſelves ſometimes; ſo as not to admit what was brought down to them.

Thus I alſo remember, that, thirty years ago, when one Rhodigi, a man of credit and reputation, came to me (being ſubject to a certain tumour, which had return'd more than once, betwixt the muſcles of the abdomen, in the right epicolic region) and ſaid, that as often as the tumour was preſent, the teſtes below that became very diſagreeably heavy, ſo that he was oblig'd to receive the ſcrotum in a bag, and ſuſtain it thereby; I remember, I ſay, to have explain'd the caſe to the patient, and the phyſicians, (who were preſent with me in conſultation) even at that time, in ſuch a manner, as to ſay, that when the oblique muſcle, on the right ſide, was ſtretch'd in conſequence of the tumour, with which it was affected, and the oblong fiſſure thereof, which is call'd a ring, of courſe conſtring'd; it was not to be wonder'd at, if the tube which carries the ſemen, and paſſes through this fiſſure, being in ſome meaſure aſtricted, the aſcent of the ſemen be, in ſome meaſure alſo, prevented.

Yet in this man, and in the former likewiſe, it may perhaps be; notwithſtanding there were no proofs of the blood ſtagnating; that the ſpermatic vein being equally compreſs'd, or ſtreighten'd, theſe ſymptoms which I have ſpoken of, were no leſs to be attributed to the obſtructed blood, than to the obſtructed ſemen.

And there is, among the letters of Valſalva, one which was written to a certain prince, one of whoſe teſtes had, after marriage, grown out to the bigneſs of a hen's egg.

Valſalva imagin'd that this tumour might be from the ſtagnating ſemen, and not without reaſon; becauſe the patient was not wont to emit his ſemen with eaſe, though in other reſpects he abounded therewith: ſo that ſometimes he was oblig'd to deſiſt from the venereal congreſs, without having made it compleat.

In like manner, in a youth of whom Hildanus gives the hiſtory (*n*); the ſummary of which is in the ſcholium on that obſervation of Barbette, to

(*n*) Cent. 4. obſ. 64. Exempl. 1.

which I have refer'd (*o*), in the Sepulchretum; who would account for the pain of the groins, and the tumour of the teſticles, not from ſemen, but from blood; as they had been the conſequents of the ejaculation of ſemen being ſuppreſs'd, after having been about to be thrown out?

Both of theſe tumours vaniſh'd on the left ſide indeed: on the right, however, the tumour not only continued, but, in proceſs of time, grew out into a very large fleſhy hernia. The ſame thing would have happen'd to another man, from the ſame cauſe, if the celebrated Crauſe (*p*) had not, by a very extraordinary ſucceſs, reſolv'd a tumour, which had already increas'd to the ſize of a large human fiſt, within two years.

But what was the event of a tumour of the ſame kind, and ariſing from the ſame origin, which I ſaw in a man of noble birth, I cannot learn: for I have heard nothing of him ſince he juſt conſulted me upon it; at which time he was only paſſing this way, and immediately continued his journey.

He, certainly, might have made trial of every kind of remedy, but the ſurgeon's knife, to no purpoſe; if the tumour was of that nature of which it was in a young man (*q*), who had a maſs of very white, and ſolid, fleſh, ariſing from a cauſe nearly ſimilar, cut out from his ſcrotum, in the center of which fleſh was contain'd a bony body of a globular figure.

But why in theſe four perſons, either one of the teſtes only ſwell'd, or continu'd to ſwell; and not both of them; ſince the ſemen muſt be obſtructed in both of the teſtes equally, by having its eflux prevented in the very middle of the venereal congreſs, it is not very eaſy to ſay; unleſs we perhaps conjecture, that the quantity of ſemen, on both ſides, was not equal; or that the fluxility of the ſemen, or the force of the coats, and the cremaſter muſcle was not the ſame; or that the abſorbent veſſels on one ſide, were more open than on the other; or ſomething elſe of a ſimilar nature.

41. Tumours, however, of the teſtes; from whatever cauſe they have their origin; ſeem to conſiſt of different matter in different perſons; as, for inſtance (beſide the examples hitherto propos'd) of a fleſhy and nervous ſubſtance, in Borrichius (*r*); of a glandular ſubſtance, and veſicles full of blood, in Bartholin (*s*); of a "ligamentuous," and in part approaching to the nature of a cartilage, in Schraderus (*t*); and of a cartilaginous ſubſtance in Ruyſch (*u*).

And I myſelf having, in a man of whom I ſhall take notice, when on the ſubject of the gonorrhœa (*x*), ſeen the right teſticle, in particular, larger than it naturally is; found, upon diſſection, a little fat lying betwixt the innermoſt ſubſtance of it, which was in other reſpects not much diſeas'd.

From hence I conjectur'd it might happen, that ſome tumours of the teſtes may be, now and then, found to have their origin from fat preternaturally generated, and increas'd. And if I had ſeen, and been at liberty to diſſect, in the dead bodies, thoſe very large tumours that I have ſometimes ſeen in

(*o*) N. 39.
(*p*) Eph. n. c. dec. 3. a. & 6. obſ. 282.
(*q*) Hiſt. de l'Acad. R. des Sc. a. 1700. obſ. anat. 4.
(*r*) Sepulchret. ſ. hac. 29. obſ. 22. §. 1.
(*s*) Ibid. §. 2.
(*t*) Obſ. ſupra ad n. 35. cit.
(*u*) Theſ. Anat. 9. n. 51.
(*x*) Epiſt. 44. n. 5.

the living body; I do not doubt but I muſt have obſerv'd ſomething ſingular, if the ſtructure had correſponded to the bulk.

For firſt, I ſaw at Bologna formerly, one ſo large as to be almoſt equal to that which Ruyſch (*y*) ſaid was of a "prodigious, magnitude;" or, if he ſpeaks of the ſame in his *curæ poſteriores* (*z*), as he ſeems to do, "the largeſt ever "ſeen in the human body." But though it was of a ſmaller ſize, I heard, nevertheleſs, that it was not taken out with ſo good ſucceſs, as that larger one.

After this I ſaw, at Padua, a teſtis of ſuch a magnitude, that unleſs you very well knew how far I may be depended upon, I durſt not write it to you; fearing leaſt you ſhould ſuſpect me of falſhood. For if that of Ruyſch exceeded "the head of a human fœtus; this, whereof I am ſpeaking, certainly exceeded the heads of two men join'd into one.

Wherefore, that I might examine ſo very extraordinary an appearance; in the month of May, in the year 1730, when the man was paſſing this way, in order to go to Eſte, where his habitation was; Anthony Mocenici, that illuſtrious chevalier, and very worthy of his brother Aloyſi, at that time Doge of Venice, would have him come to my houſe.

Where, upon firſt ſeeing the man, being ignorant who he was, and why he came to me, I ſhould have ſuppos'd him to labour under a very great aſcites, if I had not obſerv'd his belly, as it was ſtill cover'd with his garments, to be tumid only on the right ſide.

But when all the coverings were taken off, and the bandages, by means of which he kept the tumour drawn up to the abdomen as far as the hypochondrium, where it naturally tended of itſelf, remov'd; being ſurpriz'd at that bigneſs which I have mention'd, I began to handle it; for it bore the touch very well, being always without pain; and I ſeem'd to myſelf to touch a kind of ſarcoma of the form of a ſpheroid, and every where cover'd over with its ſkin.

Upon my aſking how, and from what cauſe, it had begun, the patient anſwer'd, that notwithſtanding he had receiv'd the blow when a child, the teſticle nevertheleſs did not begin to grow out into a tumour till he was at man's eſtate; but that it had at length grown out into this bulk in the ſpace of a few years.

42. But it is neceſſary, here, to put you in mind of one thing; I mean that Valſalva, as it ſtands in his papers, had ſeen the increas'd magnitude of the teſtes to be, for the moſt part, owing to the diſorder of the coats that inveſted them.

Nor is it difficult for me to believe this, eſpecially in ſome particular caſes; ſince, as I have ſaid in the preceding letter (*a*), having found the teſticles to be bigger than they naturally are, and conſiderably tumid, I perceiv'd this not to ariſe from a diſtention of their ſubſtance, but from the coats being much thicken'd: and, indeed, in herniæ, both true and ſpurious, I have obſerv'd the thickneſs of the membranes, wherein they were contain'd, to be much increas'd.

So in the hydrocele, which I deſcrib'd above in the ſoldier (*b*), I remark'd that the tunica erythroides, and vaginalis, were thicken'd; as I did elſewhere

(*y*) N. 51. cit. & tab. ibid. 3. fig. 1.
(*z*) N. 28.
(*a*) N. 28.
(*b*) N. 17.

in

in a butcher (*c*), who was affected with herniæ of the ſame kind, that both the vaginal coats were very denſe. Thus in the epiplocele of an old man (*d*), I found the peritonæum, which compos'd the ſacculus, to be dilated, and at the ſame time become much thicker; and in the entero-epiplocele (*e*) of a young man, the coat of the ſacculus was not leſs thick, and firm, than that of the pulmonary artery; and in the crural hernia of a woman (*f*) it was ſo thick, that it could be divided into many different laminæ, as it were, without any great difficulty.

Yet it may happen, where the orifice of the ſacculus is much more large than the ring, as is the caſe in very great herniæ; or where herniæ happen in thoſe places, in which the tendons of the muſcles are, in their natural ſtate, quite unperforated; as is the caſe betwixt the recti and the obliqui, or above and below the navel, betwixt rectum and rectum; it may, I ſay, happen, that the thickneſs of the ſacculus is not only from the peritonæum, but, in general, from the tendons alſo, which are driven outwards together with the peritonæum.

Mery (*g*), therefore, in that hernia which was made up of almoſt all the ſmall inteſtines, ſaw not only the peritonæum produce itſelf into the ſac, but alſo the ſeveral tendons of both the oblique, and of both the tranſverſe muſcles, and that very evidently: and how far Waltherus ſaw theſe three tendons alſo extending themſelves in a hernia, and ſuſtaining a great weight of the inteſtines; though not to be compar'd with that of Mery; and reſiſting, as far as poſſible, the farther growth of the hernia (which uſe he likewiſe thinks they perform in other herniæ, and that not unfrequently) you will learn from the Acta Eruditorum that are publiſh'd at Leipſic (*h*).

But, although Mauchartus (*i*) not only delineates a lamina, ariſing from the tendinous fibres of the external oblique muſcle (*k*), but alſo propoſes it among the other coats of the hernia, by the name of *tunica aponeurotica*; yet you may eaſily call to mind, how far I have ſaid theſe are allow'd of by me.

Nor does it eſcape me, that there are very excellent anatomiſts who deny that theſe appearances could be ſeen in herniæ diſſected by them.

And as I very readily give credit to them, ſo I ſhould not be ready to ſuppoſe that Mery, and Waltherus, thoſe excellent diſſecters in other herniæ; for they did not ſpeak of all; could not, as they made uſe of ſo much diligence in that inquiry, have ſeen what they ſay they had ſeen.

However; to lay aſide this controverſy in the mean time; there are ſufficient examples which relate to thoſe coats, that are univerſally acknowledg'd in herniæ, to make it appear, how the teſticle; which has not of itſelf become ſo tumid; may ſeem to have attain'd to a very conſiderable bulk, chiefly from the thickneſs of theſe coats being increas'd.

There is a ſecond obſervation of the ſame Waltherus, propos'd in the ſame acts (*l*), in which the ſcrotum, and the penis, are deſcrib'd to be ſo tumid,

(*c*) Epiſt. 21. n. 19.
(*d*) Ibid. n. 15.
(*e*) Epiſt. 34. n. 9.
(*f*) Ibid. n. 15.
(*g*) Mem. de l'Acad. R. des Sc. a. 1701. obſ. anat. 5.
(*h*) A. 1738. M. Jun. p. 2.
(*i*) Diſſert. & cæt. ſupra ad n. 3. cit.
(*k*) Fig. 2. ad DD.
(*l*) A. 1725 M. Novembr. cum tab. 5. fig. 1.

that

that the latter extended itſelf to the knees, and the former below them; the thickneſs of each of theſe parts correſponding to this length.

And I do not remember any obſervation to have been more ſimilar hereto, than that which was ſent to me, in print, in the year 1755, from Syracuſa, and confirm'd by the public teſtimony of the city. But this was from a living man; and that of Waltherus was made even on the dead body.

In this laſt therefore, upon examination, the ſkin of the ſcrotum was found to be three times as thick as is natural; and the cells that lay beneath, and went betwixt the teſticles, were ſo diſtended with a tenacious humour, as to reſemble a heap of inert fleſh; to which the weight of the whole tumour, that is to ſay, of almoſt fifty pounds, ſeem'd to be principally owing.

The teſticles indeed, were much larger than their natural ſize; as the thicken'd albuginea contain'd a fluid, and tophaceous concretions, ſo that but a very ſmall part, and that in one ſide only, was left free for the ſlender tubuli, which compoſe the ſubſtance of the teſtis, to occupy.

But how very little a part of the general tumour, then, was form'd by theſe tubuli, you very well conceive. That very excellent man Heiſter (*m*) has therefore ſuppos'd, with great ſagacity, as he generally does, that this was a tumour rather of the ſcrotum than of the teſticle: nor did he judge differently of ſome others, the diſſection whereof we have not; among which is that of ſixty pounds weight, ſpoken of in the hiſtory of the Royal Academy of Sciences at Paris (*n*).

For this very experienc'd man (*o*) knew, that, even in a hydrocele, and eſpecially one of long ſtanding, the coats of the teſticles, and particularly "the dartos, and vaginalis, were often very much thicken'd;" ſo that he had ſeen them equal to the thickneſs "of five or ſix lines, and more:" for which reaſon he has admoniſh'd us, that it was, for the moſt part, very difficult to perforate them," with the point of a triangular inſtrument; and that on this account (*p*), the point of ſuch an inſtrument "ought not to be "too haſtily withdrawn, becauſe otherwiſe the coats would not be pierc'd "through."

And indeed, how much the tunica albuginea may be thicken'd in a ſarcocele, he has, doubtleſs, left us to conjecture; when, after cutting into that coat, with the expectation of ſeeing the ſeminal veſſels large, and very much diſtended, he found them "equally ſmall as they generally are in a ſound "and natural teſticle, which," ſays he, "is greatly to be wonder'd at, in "ſo conſiderable a diſtention of the teſticle."

And that you may have another example of this coat being thicken'd, examine that figure of a human teſticle become bony, which is given us by the celebrated Reinholdus Wagnerus (*q*). When you have ſeen how much larger this was than the natural teſticle, then obſerve that the "ſurface" of it only, "of the thickneſs of a pidgeon's quill, had been chang'd into a very hard "bone;" that externally it was rough with bony tubercles, of the bigneſs of a pea; but internally ſmooth; where it comprehended a ſmall cavity, in which "the gelatinous matter of the corrupted ſemen lay hid."

(*m*) Diſſert. de Sarcocele, §. 36.
(*n*) A. 1711. obſ. anat. 1.
(*o*) Diſſert. de Hydrocele n. 32.
(*p*) N. 36.
(*q*) Eph. n. c. cent. 1. obſ. 30.

That

That is to ſay, the ſubſtance of the teſtis, formerly included, was now annihilated; and the bony ſurface was owing to the tunica albuginea being made thick.

43. However, although this letter is really ſhorter than the former, as I promis'd you, I omit to add other things at preſent, on the ſubject of herniæ and teſticles: and ſhall not even ſubjoin any thing in regard to the pain of theſe parts, unleſs that you may read the obſervations, which I pointed out above (*r*), from celebrated authors; and that, in thoſe wherein you will find there was pain; and you will find this in many; you will attend to the ſtate in which the teſticle was.

At the ſame time, you will readily learn from one of them, which is Heiſter (*s*), in what manner, not only in that patient, but in another alſo, whom Sproegelius deſcribes (*t*), pains may be propagated from the teſticle to the loins. Nor do I add any thing farther, though the next ſection, of the Sepulchretum, is entitled *de Teſticulorum Dolore*.

For the whole of it, when taken together with the Scholia, ſcarcely fills up two pages: and therein; to ſay nothing of the fourth obſervation, which perhaps may be an abſtract of the firſt; at leaſt the fifth, as Bonetus himſelf confeſſes, is taken from the ſecond article of the twenty-ſecond obſervation, of the preceding ſection: and of the Scholia, which he does not confeſs, one part, ſubjoin'd to that firſt obſervation, had already been adopted by him; even where it is moſt openly contradictory to the circulation of the blood; and applied to article the third, under obſervation the twenty-firſt of the ſame preceding ſection; as he alſo here ſubjoins to obſervation the ſecond, a part of the Scholium which he had there ſubjoin'd to the twentieth obſervation.

But there alſo, it is not ſo much to be wonder'd at, that what had been already plac'd under the ſecond article of the fifteenth obſervation, ſhould be again repeated in obſervation the twenty-third, as that, in one and the ſame page, what had been juſt ſaid in the ſecond part of the Scholium, to article the firſt of the twenty-ſecond obſervation, ſhould be repeated in the firſt part of the Scholium to the ſecond obſervation.

Nor would I have you ſay that many things have, likewiſe, been repeated, by me, in this letter, which I had already given in others, when relating my obſervations, or thoſe of Valſalva. For it is one thing to repeat what has been already ſufficiently ſaid; and another thing lightly to touch upon, in a brief manner, what has been already deliver'd in other places; in order to prevent obſervations from being torn piece-meal, and to make them compleat; that the circumſtances may be conſider'd in a more convenient place, as had often been promis'd there.

This method, as I hope you will approve of it, I ſhall preſerve; and the former, which I have no doubt but you will equally diſapprove, I ſhall, without heſitation, reject. Farewell.

(*r*) N. 38.
(*s*) Diſſert. ibi cit. §. 30.
(*t*) Obſ. ibid. cit. §. 51.

LETTER the FORTY-FOURTH.

Treats of the Gonorrhœa.

ALTHOUGH there are, perhaps, few anatomiſts by whom ſo many male urethræ have been diſſected, and accurately examin'd, as by me; yet it is either much more ſeldom than is commonly ſuppos'd, that very evident marks appear, in that canal, of diſeaſes having accompanied the contagious gonorrhœa; or it has happen'd, by I know not what fatality, that notwithſtanding ſo great a number of men is infected with this gonorrhœa, I never, or ſcarcely ever, ſaw thoſe evident marks of diſeaſe.

What happen'd to Valſalva in this reſpect I do not know; for he did not commit his remarks to writing, if he did chance to find any thing of this kind, in thoſe who had died while they labour'd under this diſorder. What has happen'd to others I have read.

But what I have ſeen myſelf, or not ſeen, I will now write to you, in ſuch order, that, beginning from the external orifice of the urethra, I ſhall go on to the internal orifice which is at the bladder.

2. When, in the Adverſaria (*a*), I gave my reaſons why the firſt ſeat of the virulent gonorrhœa ſeem'd, to me, to conſiſt chiefly in thoſe larger canaliculi of the urethra, which I had diſcover'd, I did not omit this among others, that from theſe ſmall canals, for the moſt part, when irritated by the acquiſition of any malignant habit, that humour, which generally diſtils from the urethra, in the firſt ſtage of this diſeaſe, might proceed.

For this humour is not true ſemen, as a compariſon of it therewith, has ſometimes taught even thoſe very perſons, who, led aſide by a falſe opinion, often made uſe of venery, in order to get rid of the diſeaſe: and as I have been thus inform'd, even by the perſons themſelves, ſo I have often been aſſur'd by others, that in this firſt ſtage of the diſeaſe, there is not, as yet, any troubleſome ſenſation in the perinæum, which ſhows the diſorder to have deſcended any deeper.

Nor again, is that which is diſcharg'd true pus: as the pain is not yet of that kind which argues an eroſion; nor has any even the ſlighteſt tincture, nor the leaſt drop, of blood ever yet appear'd.

To theſe things I think it would be now proper, to add the obſervations of that very great man Senac (*b*), according to which the globules of matter,

(*a*) IV. Animad. 9. (*b*) Traité du Cœur Supplem. c. 8. n. 5.

that

that is diſcharg'd in a gonorrhœa, are very large; but the globules which compoſe the pus of ulcers, are very ſmall and unequal; if they are look'd at with both the eyes, when furniſh'd with the moſt exquiſite glaſſes, and are compar'd with the globules of the blood.

Following Rondelet therefore in particular; who cautiouſly and prudently, as you have it in the Sepulchretum (*c*), has ſaid that this matter "bore a re-"ſemblance to pus," or "was ſimilar to pus;" I have alſo call'd it "puri-"form."

This ſituation of the gonorrhœa in the canaliculi pleas'd ſeveral authors, I do not ſay Cockburn (*d*); for this author, though in other reſpects a learned man, was even immoderately pleas'd with it; but I ſay the great Boerhaave (*e*), and the illuſtrious Haller (*f*), who acknowledge "the ſeat of the firſt "ſpecies of the gonorrhœa" to be in theſe parts; and that, by irritation being at length chang'd into eroſion of the corpus ſpongioſum urethræ, which is divided from theſe canaliculi only by a membrane, blood itſelf frequently flows out.

It has alſo pleas'd other very learned men, who mark out theſe ſmall canals by the name of *cellulæ multiplices:* with which, however, I do not very well underſtand, how they alſo comprehend the gland of Littre; or how they can aſcribe to him, who never mention'd any thing of canaliculi, the obſervation of theſe being affected in a gonorrhœa; as if this were read in the Memoirs of the Royal Academy of Sciences at Paris, for the year 1711.

But, in regard to the canaliculi of the urethra in women, which were deſcrib'd by me (*g*), in the ſame manner as thoſe in the urethra of men; and in regard to the ſebaceous glands, which I, in like manner, found in the nymphæ, and the neighbouring labia (*h*); the laſt of which go under the very name of glands, and the former under the appellation of cells; I will not ſpeak of them here for this reaſon; that as I have never happen'd to light on women, who labour'd under a kind of external gonorrhœa, or were troubled with an internal, when they died; I cannot determine whether this latter has its ſituation ſometimes in theſe canals, or the former in thoſe glands.

Nor have I been more happy in men; ſo as to meet with thoſe who were infected with the ſame external gonorrhœa, which the phyſicians of Montpelier are ſaid to have formerly call'd "ſpurious;" that I might inquire whether the matter of this external gonorrhœa came from the ſurface of the glans, without being affected with any ulcer, or from the glands of the corona of this glans; that the opinion of Littre might be confirm'd, who takes thoſe granules of the corona for glands, and not for papillæ, as Ruyſch did (*i*).

I ſay the opinion of Littre; nor was it ever mine: for when I took notice of that, I witheld my aſſent from both, in order to make a more ſtrict inquiry; ſo that I cannot help wondering there ſhould be any one, who, after having read my firſt (*k*) and fourth Adverſaria (*l*), ſhould aſcribe the former opi-

(*c*) Sect. hac 31. l. 3. in Schol. ad obſ. 1.
(*d*) The Symptoms, &c. of a Gonorrhœa, ch. 4.
(*e*) Prælect. ad Inſtit. §. 654.
(*f*) Not. *i* ad eum locum, & nota *d* §. 657.
(*g*) Adverſ. 4. animad. 24.
(*h*) Adverſ. 1. n. 11. & 12.
(*i*) Hiſt. de l'Acad. R. des Sc. a. 1722. obſ. anat. 4.
(*k*) N. 11.
(*l*) Animad 14. in fin.

nion to me; and even ſhould aſſert, that a "celebrated controverſy had "ariſen, betwixt Ruyſch and Morgagni," upon this ſubject.

For though it is true indeed, that this fell from Ruyſch (*m*), that theſe granules "had been deſcrib'd, and delineated, as glands," by me; yet as I hop'd that every one would eaſily perceive, from my Adverſaria, that this excellent old man had been ſo much taken up with other things, as not ſufficiently to comprehend my opinion, I thought it quite ſuperfluous to anſwer him, even by a line. And this is the whole of that "celebrated con-"troverſy."

Much more rare than theſe external gonorrhœas, is that which the celebrated Wolff (*n*) ſaw and cur'd. For a humour diſtill'd from the urethra that was "analogous to ſemen;" being at firſt white, and after that green; with very great pains in making water, and an incurvation of the penis; and yet was not the conſequence of impure venery, nor of any venery at all; but this gonorrhœa proceeded from other cauſes that he enumerates: and this is not only aſſerted by him, but is ſhown by the cure itſelf, as Hippocrates (*o*) ſays: that is to ſay, by the cure being brought on eaſily, and ſpeedily, by the adminiſtration of ſuch remedies, as were oppoſite to theſe cauſes.

But to paſs over this gonorrhœa, and that which is called *ficca* or dry; or as it ought properly to be call'd, according to the monitum of the celebrated Aſtruc (*p*), the dry venereal dyſuria; I muſt contract my diſcourſe, and come to that which is the moſt frequent, whereof I had begun to treat.

Wherefore, what I had in my power to ſee by diſſections, you will learn from the obſervations that I ſhall immediately ſubjoin; beginning with a pretty long hiſtory, but ſuch a one as will be the more pleaſing to you, becauſe, when I made ſome ſlight mention of the angina, on a former occaſion (*q*), I greatly complain'd, that, in a very violent diſorder of this kind, diſſections of ſuch perſons who died of it, were ſtill wanting.

Therefore, that which was, even then wanting with me, you will here have in the firſt place; and laſt of all, thoſe things that relate to the ſubject of this letter will not be omitted from the ſame hiſtory.

3. A carpenter, about three and thirty years of age, tall, large in body, and of a pretty fat habit; having been, as far as could be learn'd, in good health before; being immoderately heated by wine, and by the fire, went home in the night, in a very cold ſeaſon.

Being there ſeiz'd with a violent fever, and an angina, a phyſician was ſent for, on the very ſame night, and blood was taken from his arm. As the diſeaſe did not at all remit, he was brought into the hoſpital in the morning: where the ſame remedy was repeated, but with ſo little effect, that in the afternoon blood was taken from his foot.

On the next day, when the other remedies; which had been before given, internally, to be ſwallow'd ſlowly as well as he could; and thoſe which were then made uſe of, both internally and externally, had been equally of no effect; blood was again taken from his arm in the morning, and at noon from

(*m*) Theſ. anat. 10. n. 98.
(*n*) Commerc. Litter. a. 1742. hebd. 47. n. 2.
(*o*) Sect. 2. aph. 17.
(*p*) De Morb. Vener. l. 3. c. 3.
(*q*) Epiſt. 14. n. 39.

the

the veins under the tongue: for the jugular could not be open'd, though the phyſicians wiſh'd to have it done, the patient not being able to bear the ſituation requir'd.

After all theſe remedies, the fever and anxiety were not only not decreas'd, but even greatly increas'd; and with theſe the difficulty of ſwallowing, ſpeaking, and breathing, at the ſame time; when, on the third day of the diſeaſe, the patient ſaying that he had labour'd under a virulent gonorrhœa, for fifteen, or, at leaſt, not many more days, the vein of his foot was again open'd.

The blood which had been taken away ſo many times never had any cruſt on the top; but was always ſomewhat hard, and had very little ſerum. His neck was tumid in ſome meaſure; but not his face, which was not even red.

About two hours after the laſt venæſection in the foot, although the pulſe ſtill remain'd ſtrong, yet the patient himſelf perceiv'd death to be at hand. And this did really attack him on the ſame third day, about noon; yet in ſuch a manner, that it might ſeem to have come on accidentally.

For having aſk'd for the gargle which he made uſe of, and, perhaps, incautiouſly taken more, into his fauces, than he intended, he immediately died, in ſuch a manner, that they who ſtood by him, thought him ſuffocated from thence.

As the day was at hand, on which I was to begin teaching anatomy in the theatre; that is, the nineteeth of January, in the year 1748; the body, though kept two or three days, was, nevertheleſs, exceedingly proper for demonſtrations; as the ſeaſon of the year was ſo extremely cold, that I could even make uſe of ſome parts of it on the twenty-ſixth day after death.

The whole, therefore, being diſſected accurately, and in order, offer'd ſome things to our obſervation, which do not belong to this place; and theſe in particular which I ſhall give you here, beginning from the parts laſt diſſected, and going on to the firſt.

The veſſels of the cerebrum, both external and internal, and not only within the ventricles, but alſo here and there, through the medullary ſubſtance, were diſtended with blood; but ſtill more they that creep through the left ſide of the pia mater. This membrane, like all the other membranes of this body, whether you endeavour'd to cut into it, or cut it aſunder, gave more reſiſtance than uſual. In the lateral ventricles was a ſmall quantity of ſomewhat-bloody water.

The tongue ſeem'd to be thicker than is natural: and, at leaſt, ſhow'd the veſſels that go upon its upper ſurface, from the baſis towards the apex, to be ſomewhat thicken'd from the ſtagnating blood, not to ſay manifeſt. The uvula and the palatum mobile were ſound.

The tonſils, however, not only had the membrane, with which they are cover'd, become very thick, from a ſtagnation of yellow ſerum therein; ſo as to reſemble a kind of yellowiſh jelly; but they alſo were ſwell'd, and the left ſtill more than the right, as it was very hard, and, if you preſs'd, or cut it, diſcharg'd pus.

As to the neighbouring larynx, not only the cartilages thereof, but alſo the proper muſcles, each of which I examin'd ſeparately, were without any diſeaſe or inflammation. But there was a diſorder in the membrane, with

which the larynx is inveſted, both internally and externally: internally the diſorder was ſlight, but externally very conſiderable.

For internally it was ſomewhat redder than uſual; as in the neighbouring part of the aſpera arteria alſo; and ſomewhat ſwell'd, but ſlightly; ſo that the chinck of the glottis did not ſeem to be made narrower thereby. But where the ſame membrane clos'd the epiglottis, both on its hollow, and convex, ſurface, and even on its ſides alſo, it was tumid; being in ſome places of a bright red colour, and in other places of a bright red degenerating into brown; yet leſs on the hollow ſurface, than elſewhere; nor on the whole of that, but only on the upper third part of it.

By cutting into this part, it was plain that this tumour, and colour, were owing to blood and ſerum which diſtended nothing but the membrane, and the glandular bodies that were join'd to it; a part of which fluids already began to be converted into pus on the convex ſurface. Moreover, where the ſame membrane covers the larynx, externally, on the back-part, that membrane, and the glandular bodies, which it envelopes, were affected with a very conſiderable inflammation, eſpecially on the ſides.

For on each ſide it rais'd itſelf up into a protuberance, nearly of the thickneſs of a man's little finger. Theſe protuberances, proceeding from the region of the baſis of the cartilago cricoides, at its lower parts, and converging, as they aſcended, came ſo far, as ſomewhat to exceed the height of the arytenoid cartilages; being however entirely unconnected with theſe cartilages, and that upper part of the larynx, though they adher'd to the remaining and inferior part.

You would have ſaid that they were two inflam'd condylomata, conſidering their ſhape and colour, which was the ſame with that I have deſcrib'd in the glottis; except that, in theſe protuberances, it was more of the bright red, and leſs of the brown.

But in diſſecting them, I ſaw that they conſiſted of the membrane, with its glandular bodies, tumid from ſtagnating blood and ſerum; and that moſt on the left ſide: which ſide was moſt affected, as I have ſaid was the caſe in the tonſils alſo, and the pia mater. Thus you have the beſt account I can give you, of the ſeat, and nature, of this angina.

In the thorax the lungs were neither turgid nor inflam'd; but quite ſound: although, as I ſaid of the other membranes, thoſe of which theſe viſcera are conſtructed, reſiſted more than uſual, when cut into, or drawn aſunder; and the left lobe had been very cloſely connected with the pleura: whereas the right was quite free and unconnected.

In the pericardium was a little rediſh water; which, certainly, had not been thus ting'd by blood being mix'd with it in the diſſection: for this water was concreted, by the force of cold, into lamellæ, which were internally red.

In the heart, which was preternaturally enlarg'd, or at leaſt ſeem'd to be very large, in proportion to the body; which was itſelf large; nothing polypous was ſeen: nor was any appearance of this kind found elſewhere, but a ſmall quantity of black blood, and this neither too fluid, nor concreted.

The large artery had many marks of diſeaſe, from the valves that are prefix'd to it, which like the other parts of the heart were ſound almoſt quite to the cæliac artery; and thoſe very evident. For it was white here and

there, internally, with certain ſpots, though not very frequent, nor yet verging to a bony hardneſs.

Internally alſo, if you except the places of the ſpots, its ſurface was ſcarcely any where white, but of a red colour inclining to brown; and not ſhining, and ſmooth, as it generally, and naturally is, but unequal with certain ſmall, and low excreſcences, of the colour that I have already ſaid, both internally and externally; but of a different form and magnitude; yet ſo that you might cover the largeſt of them with a lupin, the figure of which they nearly reſembl'd.

When you look'd on them, you would ſuppoſe them to be ſoft; but when you cut into them, you would find them to be no leſs hard than the parietes of the artery. This diſorder was ſo much the greater in proportion, the leſs the artery receded from the heart; yet did not extend itſelf into the carotids, and ſubclavians, nor below the cæliac: below which, even that firſt-mention'd diſeaſe of the white ſpots became much leſs and leſs.

Beſides theſe appearances, all the parietes of the artery were harder than they naturally are. Finally, the fourth ſinus of Valſalva was clearly, though not in any great degree, larger than is natural.

And this I alſo obſerv'd in the ſeptum of the venous ſinuſſes of the heart; or, if you pleaſe, in the ſeptum of the auricles of the heart: on the ſurface which is turn'd towards the pulmonary vein, and comes forwards, it was hollow'd out with parallel furrows, which were not very ſmall.

In the belly; the viſcera of which had grown hard from the froſt, the bile itſelf having, in ſome meaſure, freez'd within its veſicle, and the blood itſelf within the ſpleen; I found nothing that was contrary to the common appearances of nature, if you except a globule in the meſentery, near to its edge, that reſembl'd nothing more in its form, colour, and magnitude, than a pretty large boil'd egg: I mean one of thoſe which are protuberant in the ovarium of a hen.

This was nothing but fat, yet of a more yellow colour than the reſt, and comprehended within one membrane only, form'd into the ſhape of a ſpherical bladder; without any membranous lamellæ, that could be obſerv'd to run in betwixt.

By reaſon of the patient's ſpontaneous confeſſion, in relation to the gonorrhœa, I examin'd the whole of the urethra very accurately. The proſtate gland might have ſeem'd to be larger than it ought to be, if it had not been join'd, as in a large body, with a large penis alſo.

This gland was ſound, the caruncle was ſound, the veſiculæ ſeminales, the ſemen, and the orifices, through which this fluid is expreſs'd from the veſicles, were in a natural ſtate. And even our canaliculi ſhow'd no peculiar appearances; except that the internal ſurface of the urethra ſeem'd to be ſomewhat moiſter, and more red, than uſual.

One of Cowper's glands was wanting, which is a circumſtance not very rare; and the ſubſtance of the other was chang'd into a hard and firm body, ſo as to reſemble a ligament.

4. Not to digreſs, then, too far from the ſubject of this letter; I omit thoſe circumſtances relative to the angina, and the peculiar appearances obſerv'd in the aorta: I ſay I omit the conſideration of theſe and other circumſtances;

ſtances; and attend only to thoſe which have a reference to the gonorrhœa.

If you ſet aſide the conſideration of Cowper's gland being become hard, which is a circumſtance, that, if it relates to the gonorrhœa at all, certainly does not relate to a recent one, and therefore, of courſe, not to a preſent gonorrhœa; you plainly ſee that nothing can be refer'd to this, beſides the increas'd ſecretion of humour in the canals: from whence the ſurface of the urethra was very moiſt, and, from the ſtrongly irritating nature of the ſame humour, redder than natural. To this ſubject may be refer'd what I ſaw in another man, when proſecuting a different inquiry.

5. About the end of March, in the year 1741, I diſſected, carefully, in the hoſpital, the body of a man, who, having been carried off by an inflammation of the thorax, was a very proper ſubject for muſcular demonſtrations, and the examination of other parts of that kind.

I made it my buſineſs, then, to inquire into natural, and not preternatural appearances; when, being about to inſpect the teſticles, in one of which I found what has been taken notice of in the preceding letter (*r*), I happen'd to obſerve, that, by compreſſing the glans penis, a little matter came forth from the orifice of the urethra.

I immediately open'd this canal, in that part which hung on the outſide of the body, together with the penis; ſuſpecting that the man had labour'd under a gonorrhœa. Yet except a dilute red colour with which the internal ſurface of that canal was ting'd, and a kind of moiſture, greater than natural, I could not ſee any thing that related to this ſuſpicion.

As I defer'd the diſſection of the remaining part of the urethra to another day, I was ſo taken up with other obſervations, as frequently happens, that I forgot to proſecute the preſent, in order to render it compleat.

6. Yet here there had been nothing more than a ſuſpicion. Attend now then to what I found when there certainly was a gonorrhœa, though not a recent one.

7. A young man, of five and twenty years of age, whoſe face was of a yellow colour, had renew'd a virulent gonorrhœa of a long ſtanding, by a more recent one, within ſix months. And while this continued, he loſt ſo much blood, and ſo frequently, from a deep wound inflicted on the left ſide of the neck, that he fell an inevitable ſacrifice to death, in the beginning of the year 1740.

The body being almoſt bloodleſs, by reaſon of the foregoing hæmorrhages; and, on that account, very fit for anatomical inquiries; it was diſſected in the ſame place as the former, in the preſence of many auditors, with ſo much the more accuracy, as it had but very few things differing from the natural ſtructure: and theſe I will give you the relation of, before I ſpeak of the urethra.

In the lateral ventricles of the brain, together with the plexus choroides, which, for the reaſon I ſaid before, were pallid, was a little not very limpid water. The wound of the neck reach'd, in its utmoſt bounds, to ſome conſiderable branches of blood-veſſels, not far from the middle vertebræ of the neck.

(*r*) Epiſt. 43. n. 30. & 41.

The belly contain'd an indurated liver; the lobules being very evidently conſpicuous; and a large ſpleen.

When we came to the genitals; on inſpecting the preputium, the glans, and the whole of the urethra, very attentively, I found no mark of ulcer, eroſion, or redneſs in any part; nor any thing elſe that related to the preſent gonorrhœa, if you except a greater moiſture than uſual, reaching from the middle of the urethra, quite to the glans.

But to that old, and long-continu'd gonorrhœa, I ſuppos'd theſe things to relate; firſt, that, almoſt from the place where the moiſture began, an oblong whitiſh line was prominent, tending, obliquely, towards the farther parts of the urethra: which line I have already taken notice of in the forty-ſecond letter (*s*), and conſider'd as the remains of an excreſcence of fleſh, that had been formerly luxuriant: in the ſecond place, although I obſerv'd nothing preternatural in the colour, and ſubſtance, of the proſtrate gland, and the caruncle itſelf; yet of the orifices, whereby the ſemen is thrown out into the urethra, the left was deſtroy'd, or at leaſt choak'd up and become blind; and the right ſo narrow, that I could ſcarcely ſee it, and with difficulty introduc'd a briſtle: I alſo found the veſiculæ ſeminales ſo contracted and ſhrivel'd, that you might ſuppoſe them to contain nothing; and this did, in fact, appear to every-body, whereas, by even preſſing them very frequently, nothing was diſcharg'd through that right orifice of which I ſpoke juſt now; yet in the teſticles was found no diſorder that was obvious to the ſenſes: finally, to omit that there was ſcarcely any trace of Cowper's glands; for they may, as I have already ſaid (*t*), be wanting from the original formation; none of my ſmall canals, except one that was narrow and ſhort, did at all appear; ſo that I was under a neceſſity of accounting for this moiſture (which I have been wont to deduce from theſe chiefly, but not wholly) principally from thoſe very ſmall ones, which were known before I diſcover'd mine: neither of which, however, "were formerly well known to Euſtachius," although an excellent, and humane young man affirms it, and ſays that the "tables of this author ſhow it:" but I take for granted that you will believe the contrary for a long time, if you continue to give credit to me, till the numbers of thoſe tables, which ſhow it, are pointed out.

8. You will perhaps be ſurpriz'd, that, in the obſervations in queſtion, wherein a gonorrhœa was preſent, no other mark had occur'd to me, that could be refer'd to the preſent diſorder, but a moiſture of the urethra, ſometimes join'd with a redneſs; ſince, to omit the obſervation of Terraneus (*u*) of a urethra "being entirely livid from inflammation, and of the diſgregated "glands" therein, which with us are the very ſmall canals, "being immo-"derately ſwell'd;" even in this firſt part of the urethra, whereof we ſpeak, Veſalius (*x*) has aſſerted that the foſſula, or lacuna, which is within the glans, "is very much infeſted with ulcers" in this diſeaſe; which is confirm'd by others alſo, and particularly by the celebrated Aſtruc (*y*), who ſays, that in this foſſula "it is found, that very conſiderable ulcerations, for the moſt part, "are latent."

(*s*) N. 41.
(*t*) Aderſ. anat. 4. animad. 15.
(*u*) De Glandul. poſt. c. 5. obſ. 5.
(*x*) De Corp. Hum. Fabr. l. 5. c. 14.
(*y*) De Morb. Vener. l. 3. c. 1. §. 2.

For

For this very thing was one of thoſe appearances, which I wonder'd had never occur'd to me; particularly, as I had ſo many times heard the complaints, in patients of this kind, of a very ſevere pain affecting them, in that part, "to a remarkable degree, while they diſcharge their urine," to uſe the words of Veſalius; ſince Terraneus (*z*) does not, as others, and among theſe Aſtruc (*a*), make mention of a ſharp, and burning pain, "at the time of "making water," but even ſays, "that it is, for the moſt part, ſcarcely per-"ceiv'd" at this time: yet that, "when the patient has finiſh'd to diſ-"charge his urine, there is a violent burning through all the tract of "the urethra, and particularly where it terminates in the glans."

Which pain, that follows making water, I do not for this reaſon diminiſh; but I ſay that I have heard the greateſt complaints of that pain which accompanies the diſcharge, ſo as to have lit on ſome perſons, who affirm'd that they would not diſcharge their urine; unleſs I could, by ſome opportune remedy, alleviate the torture, wherewith they were, at that time, affected.

And I ſatisfied the deſires of theſe perſons, not only by diminiſhing the acrimony of the urine, as far as poſſible, but, particularly, by a method not far unlike that of Arantius (*b*); who taught thoſe that were affected with a violent pain, and ſoreneſs, from the hæmorrhoids, how to diſcharge their excrements with leſs torture of the inteſtines, by ſitting upon a cloſeſtool full of a hot, oily, and watry fluid; by the fomentation of which, the anus, not only when ſhut, would be ſoften'd and relax'd, but ſoon after, alſo, when open'd to emit the contents of the inteſtines.

That is to ſay, I have taught them to let the penis down into a glaſs chamber-pot, half-full of warm milk; and, after having, by degrees, mitigated the pain in ſome meaſure, by that fomentation, to let their urine come from them gradually, and without impetus; ſtill keeping the penis immers'd in the milk.

There have been ſome, who, when inſtead of milk (the uſe of which in this manner I afterwards ſaw was taken notice of even by Riolanus (*c*), as alſo the introduction of a ſhort leaden or ſilver pipe, which our Fabricius (*d*) had invented); there have been ſome, I ſay, who, when inſtead of milk, oil recently expreſs'd from linſeed was at at hand, have choſen to make uſe of this.

And on both ſides it is affirm'd, that great advantage has been receiv'd from theſe applications: theſe laſt having added this circumſtance alſo, that when the preputium was tumid and painful, the pain, and tumour, of that part had been diſſipated in the courſe of one ſingle day, by keeping it in this kind of fomentation.

But this by the way; which you may render ſtill more uſeful, by diſtinguiſhing caſes, and boiling ingredients in the milk, ſuitable to the particular caſe. Let us return then to our ſubject.

Although Veſalius, and others, have ſaid what is true; yet not all gonorrhœas, nor at all times, have the ſame acrimony. It has indeed happen'd, which is a very ſurprizing thing, that none have ever been met with by me,

(*z*) Loc. cit.
(*a*) C. cit. §. 3.
(*b*) De Tumor. p. n. c. 60.
(*c*) Anthropogr. l. 2. c. 30.
(*d*) De Chirurg. oper. ubi de Penis Chir.

in

in diſſection, but ſlight ones; or that I have met with them only at their milder ſtage. Yet I have often lit on ſuch traces, as ſufficiently ſhow'd what injuries I ſhould have found, even in this firſt part of the urethra; if I had diſſected theſe canals when they were moſt affected thereby.

9. For you read juſt now *(e)*, that in the young man who had been affected with an inveterate gonorrhœa, no more than one of my canaliculi was left, and that this was narrow and ſhort. No more than one, likewiſe, appear'd in a certain porter; whoſe caſe (as he fell from a great height, and died in conſequence of this fall) I ſhall deſcribe to you when I come to treat of wounds and blows *(f)*: and in his urethra, where it correſponded to one ſide of the corona glandis, remain'd ſome mark of an old injury.

And you have ſeen, from the forty-ſecond letter *(g)*, that no more than one canal was remaining in an old man, who was a foreigner; whereas the cicatriz'd ſtate of the glans, and the contracted ſtate of the urethra, plainly ſhow'd what diſorder had formerly preceded: and you even know from the ſame place *(h)*, that in a young man, in whom thoſe ſame tokens were not wanting, not ſo much as one of them remain'd; to ſay nothing of a man, whom I ſhall deſcribe hereafter *(i)*.

And nothing is more probable, than that, in conſequence of inflammation, and exulceration, which had, at length, ariſen in the ſmall canals, the thin membranous parietes thereof had adher'd to each other; and that the cavity had, by this means, been intercepted and loſt: for that there had been ulcerations, in that very part of the urethra, the coarctation of this part, and even the excreſcence, of luxuriant fleſh, in the very ſeat of the canaliculi, jointly demonſtrated.

But if theſe diſorders have been violent; provided they have not been extremely violent, or not common to all the canals; either all or ſome of them may remain.

Thus in a certain man, whom I diſſected in the hoſpital, about the end of November, in the year 1718, having found marks in the beginning of the urinary paſſage, of a foregoing lues; I ſaw that ſome canals, though but few, ſtill remain'd; juſt as you have read, that, in the butcher (who, as I have related to you in the eighth letter *(k)*, had ſmall ulcers in the preputium, and cicatrices in the urethra) they were but very few in number: nor have I mention'd more than one or two in a gentleman, who had been, more than once, affected with a lues venerea, as ſpoken of in the twenty-eighth letter *(l)*.

But I remember, that they were all ſtill remaining, in the ſtable-keeper *(m)*, whoſe urethra I, nevertheleſs, found unequal with two whitiſh lines, at about the diſtance of three fingers breadths from the outermoſt orifice; which, I take for granted, were the traces of cicatrices and excreſcences.

Yet when they are very attentively examin'd, by any one who is well vers'd in the ſtructure, and appearance, of theſe parts, when in their natural ſtate; I know not what is then ſometimes perceiv'd, from whence it

(*e*) Supra, n. 7.
(*f*) Epiſt. 53. n. 37.
(*g*) N. 40.
(*h*) N. 39.
(*i*) Epiſt. 50. n. 30.
(*k*) N. 28.
(*l*) N. 6.
(*m*) Epiſt. 4. n. 19.

may be ſuppos'd that they had been, in ſome way or other, affected; as I know that it happen'd to me, in the body which I ſhall ſpeak of juſt now.

And as, in thoſe perſons, in whom all theſe larger canals are obliterated, it is certain that ſo much of the lubricating humour, which ſerves to defend the urethra againſt the acrimony of the urine, as they have been the inſtruments of its ſecretion, muſt be wanting; ſo it is agreeable to reaſon, that they muſt be, afterwards, more liable than others to a ſenſe of ardor, from the ſtimulus of the urine, when in a more acrid ſtate than uſual; and even to eroſion, unleſs the whole urethra has grown callous: and that the others, in proportion to the number of the canals that have been loſt, or in proportion to the injury brought upon theſe canals, are attack'd with uneaſineſſes of the ſame kind, though ſomewhat ſlighter indeed. But let it be ſufficient to have hinted at this. And let us go on to what I juſt now ſpoke of.

10. Certain parts of an aſthmatic man, who had died in the hoſpital, were brought into the college, when I was teaching anatomy from the body of another man, in the year 1746. For I like to ſhow the ſame parts, from more than one body, when it is in my power; and to ſhow them differently diſſected from each other: and this I was then inclin'd to do in the veſiculæ ſeminales, and the penis.

Theſe veſicles, although their cells were internally moiſt, nevertheleſs contain'd no ſemen. The caruncle, and whatever related to the upper part of the urethra, was in a proper ſtate.

But when we were about to cut through the lower part, and had introduc'd a pretty thick probe, through the lower orifice, and open'd the part of that canal, which is ſurrounded by the glans; the ſurface of which part was ſomewhat unequal; on attempting to puſh the probe higher up, we found that it would not paſs for more than an inch and a half.

Then having attempted the ſame thing, at the upper part which was open, we found the ſame obſtacle, when we came to that part which I have refer'd to. Opening it therefore, by degrees, on that ſurface (according to my cuſtom) which is oppoſite to my canaliculi, I at length obſerv'd theſe things.

There was a tract of three inches breadth, or more, from which it is was eaſy to ſee that the urethra had formerly been ulcerated. For on that ſurface, in which theſe canals are, were obſerv'd three or four whitiſh, and almoſt tendinous, little chords, that paſs tranſverſly, or rather bands, not very prominent, nor ever ſeparating themſelves from the internal membrane of the urethra.

Betwixt chord and chord, there was an interſtice; and then, almoſt in the middle ſpace betwixt the firſt and laſt, the urethra contracted itſelf for about as great a length, as two fingers breadth would have taken up; ſo that, in this part, it was narrower, by almoſt one half, than it was either above or below.

Though all theſe things fell within the region of thoſe ſmall canals, whereof I am ſpeaking, yet they themſelves, and their orifices, ſeem'd, at firſt ſight, not to be in a preternatural ſtate.

But when I fix'd my eyes very attentively thereon, and conſider'd them accurately, I was very certain that they did differ from their natural ap-

pearance, in a certain manner, which I can better conceive of, than explain in words; ſo that it was clear they had formerly ſuffer'd ſome injury, though leſs than that with which the neighbouring part of the urethra had been affected.

And this the ſituation of the chords, that is of the cicatrices, in that ſurface of the urethra only; I mean betwixt the orifices of the canaliculi; ſeem'd to confirm: as it ſhow'd from whence the irritating, and at length ulcerating, virus had diſtill'd.

11. But now let us paſs on to the farther part of the urethra, as I have promis'd. We alſo meet with the ſeat of a gonorrhœa here, the ſecond with us, the firſt with Littre; that is to ſay, as he himſelf has determin'd, Cowper's glands: for ſo I ſhall continue to call them, ſince Mery, for I know not what reaſon, ſeems to have given up his claim, as he ſilently ſuffers they ſhould have been ſo call'd more than once by Littre, and ſhown in the Royal Academy of Sciences (*n*) under that name; and moreover, that in the hiſtory of this Academy (*o*), the firſt diſcovery of them ſhould have been expreſly aſcrib'd to Cowper.

But how ſeldom theſe glands are the ſeat of the gonorrhœa, appears very clearly from hence, that Littre (*p*) having diſſected about forty bodies of perſons who had been affected with a gonorrhœa, found only one in which any diſorders of theſe glands appear'd: and theſe he deſcribes accurately, and ſeparately, with all the circumſtances which relate to this ſpecies of gonorrhœa; not even being ſilent as to the cauſe why it is ſo rare.

I am leſs ſurpriz'd, therefore, that I have not lit on the body of a man affected in this manner.

Yet I ſuppoſe that I have ſeen marks of this diſeaſe having formerly preceded; either when I have found both theſe glands, or one of them (as in a carpenter of whom I have ſpoken above (*q*)) chang'd into a hard ſubſtance; for, after inflammation, glands frequently grow hard; or when I have met with traces in their ducts, not of inflammation only, but alſo of ulceration; as in that caſe of which I ſhall immediately ſpeak.

12. A young man having died in the hoſpital, about the middle of April, in the year 1718, in conſequence of a blow on his head; I diſſected the parts of generation, on the anatomy of which I was then very frequently employ'd, with accuracy. And I found the other parts, of which I am not about to ſpeak, in a regular and natural ſtate.

That the urethra was not in its natural ſtate, I immediately apprehended, when, upon uncovering the glans, I obſerv'd a hollow cicatrix thereon. Yet the proſtate gland, Littre's gland, and the ſemilunar caruncle, ſhow'd no appearance of diſorder.

But when I had open'd the remaining part of the urethra, and had ſeen ſome of the firſt of my canaliculi deſtroy'd; for none of their orifices began to appear, till at about the diſtance of four fingers breadth from the extreme part of the urethra; examining every thing very attentively, I was ſtruck by the appearance of the ducts of Cowper's gland; the right of which was thinner

(*n*) Mem. a. 1700. & 1711.
(*o*) Annor. eorund.
(*p*) Memor. a. 1711.
(*q*) N. 3.

than natural, and the left thicker: as was ſeen through the internal coat of the urethra.

Into the thinner duct I in vain attempted to introduce any thing; ſo that I ſuppos'd the parietes either to have coaleſc'd from inflammation, or to have been contracted to the narroweſt degree poſſible. The left, on the contrary, was diſtended with a yellowiſh and mucous humour; and ſeem'd as if it would readily admit a pretty large probe: and did in fact admit it, but from the part of the gland; for the oppoſite extremity, that open'd in the urethra, had a very narrow, and even ſo obſcure a termination, that I judg'd it to ariſe from this cauſe, that the duct was ſo full of moiſture, and the gland belonging thereto thick; whereas the other was thin, ſlender, and contracted.

13. You will here aſk, why I conjectur'd that the narrow part of this extremity might have become thus narrow, from a preceding ulcer. Why I call'd to mind, that Littre, in the body, in which alone it is ſaid (*r*) he had found this ſpecies of gonorrhœa, had never remark'd any ulceration, but at the edges, and about the edges, of one of the orifices of thoſe ducts; and that Cowper himſelf, in the explication of that figure (*s*), wherein he has delineated both thoſe ducts, had taken notice that the orifice of one of them was very large, "in that ſubject, from an ulcer."

And indeed both of them have ſeen an ulcer at the orifice of the duct; but they, or, at leaſt, the ſecond of them, an ulcer ſtill eroding; whereas I, unleſs deceiv'd in my conjecture, ſaw one brought to a cicatrix; wherefore they might ſee the orifice very open; and I ſuppoſe it to have been conſtricted from a cicatrix.

And indeed Terraneus (*t*) found the orifice quite obſtructed, and the duct ſurprizingly dilated from thence; and that on the left ſide: in which ſide it happen'd that thoſe three obſervators, and I, found the diſorders of the orifice.

14. But going, from thoſe orifices, farther into the urethra, we come to the ſecond of the two parts in this canal, in which Veſalius (*u*) has not only remark'd, that all, who are affected with a gonorrhœa, "feel excruciating "pain," but has alſo given us the reaſon why they feel a pain in this ſecond part, when the penis is erect.

This place anſwers to the lower part of the perinæum. For there, as by reaſon of the flexure of the canal, its ſteep and very low ſituation, the corroding humour ſtagnates; it there alſo erodes (or at leaſt irritates) "more than "in any other part of the canal; and when the eroded meatus is ſtretch'd "together with the penis, it cannot be but a ſolution of continuity muſt be "perceiv'd in that part."

And theſe patients are not only heard to complain, at that time, of an uneaſy ſenſation in this part; but even when, in attempting to expel the laſt drops of urine upwards from thence, they compreſs this part of the meatus, by means of the muſcles that lie wrap'd around it.

The gland of Littre ſurrounds this place: and in that place I ſuppoſe the urethra to be ulcerated; ſince I have, in that part alſo, ſometimes ſeen thoſe

(*r*) Supra, n. 11.
(*s*) Vid. in Act. Erud. Lipſ. a. 1702. m. Novembr. ad tab. 8. fig. 1. litt. II.
(*t*) De Gland. obſ. 6. & fig. 1. ad D.
(*u*) C. 14. cit. ſupra ad n. 8.

extuberant lines, which I conſider as cicatrices; and as Terraneus (*x*) found ulcers there from a long-continu'd gonorrhœa.

But theſe things happen only ſometimes. For more generally, I believe that the irritation, and inflammation, of that part, are ſufficient to explain what Veſalius ſays. Now attend to what I myſelf have ſeen of this ſpecies.

15. A decrepid old man, who had been ſeverely afflicted, for many years, with a lues venerea; ſo that you could ſcarcely underſtand what he ſaid; and finally had labour'd under a difficulty of making water, and a gonorrhœa, for twelve years; was gradually waſted away by theſe diſorders, and by old age itſelf; and died before the middle of January, in the year 1717.

As I diſſected ſome parts of this body in the hoſpital, I obſerv'd the following things, which related to the diſorders in queſtion.

The uvula, a part of which was wanting, the upper and moſt poſterior ſurface of the tongue, and the cartilago epiglottis, which had been formerly connected by ligaments, were ſo full of cicatrices, that nothing could be more ſo.

Wherefore, that cartilage being unequally contracted, terminated almoſt in a triangular vertex; being much more ſimilar to that of a dog than of a human creature.

And indeed the diſorder propagated itſelf into the remaining part of the larynx, and the trunk of the aſpera arteria, at that part which was neareſt to it: one of the arytenoid cartillages was luxated as it were; not being parallel to its fellow: but within that artery, large and unequal faſciculi of fibres, as it were protuberated: and on its external ſurface, at the ſpace of two fingers breadth below the cricoid cartilage, at one ſide of the membranous, and muſcular interſtice, a gland was prominent of the bigneſs, and ſhape, of a vetch, and of a cineritious colour; being internally of a red inclining to brown; that is to ſay, in a round cavity, which was ſurrounded by white, and not lax parietes.

This gland I took for one of that great number, there delineated by me (*y*): which, by reaſon of the foramen, going to the cavity of the aſpera arteria, being ſhut up on account of internal diſorders, had grown out in this manner, and perhaps more ſo formerly.

Before we open'd the belly; for there was no time to open the cranium, and thorax; we obſerv'd the moſt evident cicatrices from buboes of the groins. Then letting alone the other viſcera, which ſeem'd to be in a pretty natural ſtate, we particularly attended to the urinary parts.

The kidnies were very ſmall; and, by reaſon of hemiſpherical protuberances, unequal in their ſurfaces: yet the ſubſtance thereof ſhow'd no diſorder, except that it was more firm and compact than uſual: although in the pelvis of one of the kidnies, was a little quantity of whitiſh and turbid ſerum.

The ureters were much dilated, and were ſeen to be internally red, almoſt quite to the kidnies: but both theſe marks of diſeaſe decreas'd, in proportion as they aſcended. In the right ureter, I ſaw the internal coat protuberating, about the middle of the tube, and doubling itſelf ſo as to make an annular

(*x*) De Glandul. c. 5. & obſ. 3. (*y*) Adverſ. I. tab. 2. fig. 1.

kind

kind of valve, of a moderate height, which was turn'd againſt the courſe of the urine.

As both of them were half-full of a mucous matter; on their internal ſurface, from the middle upwards, were prominent, here and there, drops (as they were to appearance) of a ſpherical figure; ſome larger and ſome ſmaller; and having attempted to wipe them away, with the ſponge, to no purpoſe, by applying the knife thereto, and compreſſing them betwixt my fingers, I ſaw them immediately reſolv'd into a kind of viſcid humour, which was ting'd, as it were, with a very dilute colour of tobacco; ſo that after I found hydatids hanging from the ſame coat, as I have already written to you (z), I ſuppoſs'd theſe drops, that I am ſpeaking of, to have been of the ſame kind.

Moreover, the bladder, conſiſting of very thick coats, through the internal ſurface of which a kind of thick faſciculi of fibres were ſeen, join'd together by a various kind of intanglement, overflow'd with a white and turbid humour. Then, beginning the inciſion of the urethra, from the glans; one ſide of the corona whereof had been formerly corroded by an ulcer; I ſcarcely found any thing worthy of remark, till I came to Littre's gland.

This part was, internally, cover'd over with very thick ſanguiferous veſſels, ſo as to be far more red, than black, as it uſually is. And the proſtate gland offer'd no appearance that deſerv'd great attention, beſides three very ſhort and ſuperficial ſinuſſes, which contracted themſelves, from a pretty large orifice, into the form of a cone; and were ſituated betwixt the ſeminal caruncle, which was in its natural ſtate, and the orifice of the bladder, according to the length of the urethra.

16. In this body alone, do I remember to have ſeen the urethra thus affected, in the perinæum: to which affection, however, ſome cauſe might be afforded, even by a part of the urine ſtagnating there; eſpecially in a decrepid old age, and when the urine itſelf was not in a natural ſtate.

At leaſt this kind of affection was not found in the many others, whom I have deſcrib'd, as having been affected with a gonorrhœa; and not only in this letter, but in others alſo; and particularly in a certain ſervant (a) of a miller, who dying at the time of being afflicted with a gonorrhœa; muſt have had ſome mark of diſeaſe, in the pendulous part of the urethra, which was not allow'd to be diſſected; ſince in the upper part of this canal he had no more than the many others, any mark of diſeaſe in any part.

How did it happen then, you will ſay, to be aſſerted, with one common voice as it were, that there was a diſorder in the proſtate gland, and the ſeminal caruncle.

Without doubt becauſe, as they did not doubt, at that time, but the humour which drips down in a gonorrhœa, if legitimate, is uninfected ſemen, ſo they did not doubt, if the gonorrhœa was a ſpurious one, but the diſcharge was of ſemen contaminated with the venereal miaſmata.

But afterwards, ſome of the phyſicians began to ſuſpect, that what flows from the urethra, in a legitimate gonorrhœa, is not always real ſemen; as they ſaw that many did not grow ſo thin, and become enervated, as they muſt in courſe have done, from ſo great a quantity of humour being diſ-

(z) Epiſt. 42. n. 11.

(a) Epiſt. 24. n. 18.

charg'd,

charg'd, and for ſo many years together, as frequently happens, if it were real ſemen.

And indeed, we ſee into what an emaciated ſtate, and dejection of ſtrength, they fall, who diſcharge the ſemen, in conſequence of laſcivious dreams, very often, and for a long time together. Some of theſe perſons I have known, who having receiv'd no advantage from remedies, and fearing leſt they ſhould be hurried into a fatal atrophy, determin'd, by a kind of happy thought, to tie the penis round about with a band of ſoft leather, under the very margin of the corona glandis; ſo that, as long as the penis did not become rigid, they ſhould feel no inconvenience from it; but when it began to grow rigid, that it ſhould immediately create an uneaſineſs, and the danger of emitting the ſemen be remov'd, by being rous'd from their ſleep.

Moreover, Boerhaave proceeded much farther than the ſuſpicions of theſe phyſicians led him, as he expreſly denied (*b*) that he had ever known true ſemen to be diſcharg'd without a venereal tentigo, either ſleeping or waking; ſo that it muſt be a very extraordinary diſeaſe indeed, wherein this fluid is ſpontaneouſly diſcharg'd, and without any ſenſation.

He therefore judg'd the diſcharge to proceed from the proſtate gland.

However, I do not ſay theſe things, becauſe I believe that true ſemen is never diſcharg'd without venereal cogitations. For I believe, that, where the edges of the ſmall foramina, through which the ſemen deſcends into the urethra, are eroded, or very lax; or where the ſemen itſelf is very watry; it may flow down without any laſcivious idea; as happens to ſome from the injection of a pretty warm glyſter, or from diſcharging the inteſtinal fæces when very hard: except, in the former, that which is diſcharg'd is always in ſuch a ſmall quantity and of ſuch a kind that it is not abſurd to account for it from the proſtate gland, by reaſon of its peculiar nature, and being always in ſmall quantity; and in the latter it can never be from the veſiculæ ſeminales.

But as I know that this does not happen on every occaſion, as was formerly ſuppos'd, ſo that it does happen ſometimes, is out of my power to deny.

17. We are come, as you ſee, to the laſt ſeat of the gonorrhœa in the urethra; I mean the proſtate gland, and the ſeminal caruncle. And if the latter of thoſe parts always ſhow'd the ſeminal foramina to be very open, at that time, either by means of laxity or eroſion; or if the former were ſo ulcerated in all perſons, that the ulcer reach'd to the ſeminal canals, which paſs thro' that gland; there would be no reaſon why we ſhould deny, that a flux of real ſemen muſt of courſe happen.

But in many there is nothing of this kind; as not only what I have hitherto written, in this letter, ſufficiently ſhows, almoſt in general, but the obſervations of others, amongſt whom is Terraneus (*c*), and Blancardus, whom he quotes, confirm; but in particular Littre (*d*), who, from his own inſpections, has determin'd the three ſeats of the gonorrhœa, in each of which the diſorder ſometimes is, without affecting the two others: and of the three he holds one to be the proſtate gland: after this he ſhows that when the ſeat of it was in Cowper's glands, the proſtate was not affected; and demonſtrates with what

(*b*) Prælect. ad Inſtitut §. 776.
(*c*) De Gland. c. 5. obſ. 3. & ſeq.
(*d*) Mem. de l'Acad. R. des Sc. a. 1711.

difficulty

difficulty the virus can be propagated into this gland, or into the caruncle from thence.

But notwithſtanding the truth of theſe things; it cannot however be denied, that, in others, nevertheleſs, (as, for inſtance, in moſt of thoſe perſons who are troubled with a very virulent, and obſtinate gonorrhœa) a diſorder has been found in the proſtate, and the caruncle.

For to take no notice of what is ſaid by Wharton (*e*), that the ſmall excretory foramina of the proſtate gland, which in healthy perſons are not conſpicuous, "are very evidently diſtinguiſh'd in them;" obſervations are publiſh'd, and even extant in the Sepulchretum (*f*), by Bartholin, Severinus, and Wirſungius, of the ſame gland being ulcerated, or affected with an abſceſs in a gonorrhœa; and after a gonorrhœa, of its being cicatris'd: and you likewiſe read there (*g*), that Guenotius deſpair'd of a cure in that diſeaſe, when, by introducing his finger into the anus, he perceiv'd a reſiſting tumour of this gland.

Nor are more recent obſervations wanting, of this gland being vitiated from a gonorrhœa. Two of which, in particular, it may be proper to produce, the one of Brunnerus (*h*), and the other of Genſelius (*i*).

For theſe authors, although they differ'd from each other ſo much, in regard to caruncles growing out in the urethra, that the firſt of them ſaid theſe were nothing more than the figment of the ſurgeons; as he had obſerv'd in a certain perſon, that the impediment to the catheter's introduction, had not been from a caruncle, which did not exiſt, but from "a remarkable "ſtricture, and coarctation, or rather aduſtion," of the urethra; almoſt as I have deſcrib'd above (*k*) in the aſthmatic man; and Genſelius, who, in another body, had ſeen a caruncle of this kind, but no coarctation, contended for theſe caruncles: at the ſame time then, that they diſagreed about theſe points, they perfectly agreed in this, that the ſecond, in his patient who had been affected with a recent gonorrhœa, after labouring under a virulent one for ſome time before, had found "ſeveral little ulcers about the proſtate;" and the firſt in his, beſides "a very great ſtricture of the meatus," in that part alſo, had ſeen "the ſurface thereof, about the proſtates, very evidently "mark'd with cicatrices, from old and inveterate ulcers, which were then "heal'd."

But as to what relates to the ſeminal caruncle itſelf, you have it, not only in the Sepulchretum (*l*), that Veſalius, in this city, found both the extremities of the veſſels, that carry down the ſemen, and lie on the ſides of the caruncle, ſo as in ſome meaſure to eſcape the ſight in other bodies, to be "open and lax," in a certain man who had labour'd under this diſeaſe; but you read alſo in the celebrated Benevoli (*m*), both an obſervation of his own, on a man, who had been afflicted with the ſame diſeaſe, almoſt two and twenty years, in whom was a large and callous ulcer, lying hid in the proſtate gland in ſuch a manner, that it only emitted the pus by the caruncle; which

(*e*) Adenogr. c. 31.
(*f*) Sect. hac 31. obſ. 5. §. 1 & 2.
(*g*) In Schol. ad obſ. 4.
(*h*) Eph. n. c. cent. 1. obſ. 97.
(*i*) Earund. cent. 6. obſ. 84.
(*k*) N. 10.
(*l*) Sect. cit. obſ. 2.
(*m*) Propoſiz. int. alla Carunc. c. 3.

was

was likewiſe eroded internally by the ulcer; and other obſervations (*n*) of the ſame caruncle being ulcerated in a gonorrhœa, that are taken notice of from Genga.

And the caruncle you know is ſo ſmall, that there can ſcarcely be an ulcer in it, but it muſt corrode the extremity of both, or at leaſt of one of the ſeminal canals; and by this means open a paſſage, for that fluid to be continually diſtilling down, even more than when the orifices of the ſame canals are too lax, and open.

However, the ulcers that are in the proſtate gland do not all do this; but only thoſe which are in that part of it, through which one, or both, of theſe canals are carried; and this part is the higheſt behind the urethra: but when ulcerous ſinuſſes are brought on from thence, they open a paſſage for themſelves, for pus, and for ſemen, into the internal ſurface of the urethra; or, on the contrary, by winding, and creeping, they reach from this internal ſurface, quite to thoſe canals.

Other ulcers of this gland diſcharge their pus, mix'd together with the humour ſecreted therein; either through the proper orifices of the ulcers themſelves, which may lie open within the urethra, or through the natural orifices of the ſame gland: through which, when they are only very lax, and not affected by an ulcer, this humour alone, and not either pus, or ſemen, is diſcharg'd.

And theſe things I have hinted, that it might be underſtood, to what claſs thoſe traces of old diſeaſes, which I have happen'd to ſee, either in that gland, or in the caruncle, or in both of them, are to be referr'd; and this even though I ſhould be ſilent upon the ſubject.

18. And in the firſt place, I have found ſuperficial traces; as, for inſtance, thoſe whitiſh and protuberant lines, the remains, as I ſuppoſe, of excreſcences; or thoſe three very ſhort ſinuſſes, which I deſcrib'd above (*o*), in the decrepid old man: but others I have met with that were deep, and quite hidden; as you will learn from the following hiſtory.

19. In the year 1742, when I began the public demonſtrations of anatomy, I made uſe of the body of an old man, whoſe diſorders I could not get any certain information of; for which reaſon I ſhall tell you the more briefly, what preternatural appearances I met with.

The thorax contain'd a heart which was enlarg'd, and had the parietes thicken'd: the beginning of the large artery was wider than it naturally is, and internally diſtinguiſh'd with very frequent white ſpots, of a tendinous nature as it were, not to ſay bony.

And the belly, which had been previouſly examin'd, exhibited the ſame kind of ſpots in the ſame artery, as it paſs'd through that cavity; though leſs conſiderable than in the thorax; if you except one very hard ſpot, which was at the orifice of the arteria ſacra, and ſeem'd to have render'd this orifice more contracted than the trunk was in proportion.

But as I have already taken occaſion to tell you, in the twenty-ninth letter (*p*), what preternatural bodies were ſeated upon the ring of the pylorus,

(*n*) C. 5.
(*o*) N. 15.
(*p*) N. 17.

or what glands were prominent in the antrum pylori, there is no reaſon why I ſhould repeat the relation here.

The liver, upon its convex ſurface, was almoſt univerſally become united to the diaphragm. The ſpleen was thicker than uſual, and wider; being internally of a dilute ſcarlet colour: the arterial branches, which enter'd it, were themſelves tortuous indeed, but the trunk of the ſplenic artery, from whence they came, was, contrary to the uſual cuſtom of nature, not at all reflected, or tortuous, in the whole of its courſe.

The kidnies were longer, in proportion to their breadth, than they naturally are. The coats of the bladder were much thicken'd.

Finally, the proſtate gland, where it poſſeſſes the anterior part of the urethra, had a cavity, entirely included within its ſubſtance, of the figure and magnitude of a middle-ſiz'd grape; the parietes of which, being of the ſame colour with the reſt of the gland, ſeem'd to be inveſted with a kind of thin membrane, as if it were the follicle of the tumour: but within theſe parietes nothing was contain'd.

20. As it was not at all clear, what had been formerly comprehended in this cavity, and how it had afterwards been remov'd; it brought to my mind what I had ſeen, a year before, in another old man, of whom I ſhall ſpeak of to you (*q*), when on the ſubject of fevers.

That is to ſay, in the proſtate gland, which was enlarg'd, and, in its external circumference, of a red colour inclining to brown, I found within the remaining part of its ſubſtance; which was in other reſpects in a natural ſtate; granules of tobacco as it were, of a yellowiſh colour inclining to blackneſs; and thoſe in ſeveral places.

Theſe appearances were not far from the internal ſurface of the urethra; ſome lying ſcatter'd up and down at a conſiderable diſtance from each other, and ſome being crowded together into one cavity, much leſs than that whereof I juſt now ſpoke.

Shall we then ſuppoſe this larger cavity alſo, to have been, at one time or other, fill'd with granules of this kind? But of what nature are theſe granules? For I have found them in many bodies, and not then for the firſt time.

In the Adverſaria (*r*), I conſider'd them as a humour which is ſecreted in the proſtate, and coagulated into that form: nor do I at preſent ſee any reaſon why I ſhould not conſider them in the ſame point of view alſo.

Yet what can be the cauſe, from whence this humour changes its form and colour in ſuch a manner, whether from the lues venerea having formerly preceded, or any other kind of diſorder, I leave quite undetermin'd; as I likewiſe do that ſuſpicion, whereof I gave a hint in a former letter (*s*), I mean whether theſe granules may not ſometimes be the matter of the calculi, that are found in this gland.

Yet I never met with a larger quantity of thoſe granules within this gland, than in the potter; as you will readily perceive by reading over again my ſeventh letter (*t*): and, in regard to him, you will conſider whether you may

(*q*) Epiſt. 49. n. 18.
(*r*) IV. Animad. 14.
(*s*) Epiſt. 42. n. 37. in fine.
(*t*) N. 11.

aſcribe

aſcribe them to an old lues venerea, that had preceded, by reaſon of no frænulum remaining at the glans, nor any traces of it; as you alſo will, in regard to the old man, whoſe hiſtory is given in the twenty-fourth letter (*u*), in whom no more than one of the larger canaliculi of the urethra remain'd; and that in a ſlender ſtate; at the ſame time that theſe granules were not wanting at the ſides of the ſeminal caruncles.

I am inclin'd to add two other examples, in this place, from the bodies of men: and though I am almoſt altogether ignorant what diſorders they had been affected with, yet I ſhall not ſcruple to relate what preternatural appearances they had in the other parts of the body alſo; for I do not think it quite without its utility, as you have ſeen elſewhere alſo, to take notice of preternatural appearances; that by comparing them together with accuracy, it may, at leaſt, be known, what marks of diſeaſe occur more frequently, or more rarely, in certain ages and habits of body.

21. The body of a man, of four and fifty years of age, who had been gradually carried off by an apoplectic diſorder, was given to the college in the year 1728; to begin the public demonſtrations from; till an opportunity of getting better bodies ſhould offer itſelf. For which reaſon the head was not touch'd. What was found in the belly, and in the thorax in part alſo, that deſerv'd notice, I ſhall obſerve at preſent.

The inteſtines were lax, and in a manner inflam'd: yet neither theſe, nor the ſtomach, had any mark of eroſion; ſo that ſome recent cauſe might be ſuppos'd to have occaſion'd that appearance which I ſhall deſcribe in the duodenum; eſpecially as pus, putrid ſmell, a thickneſs and inequality of the lips, and all other marks of ulceration, were wanting.

At the diſtance of two fingers breadths below the pylorus, was a place, in which the internal coats of the inteſtines were wanting; and thus an orifice capable of admitting a finger was form'd: and a finger being introduc'd into this orifice, the moſt external coat of all, which eaſily gave way in the outward direction, was form'd into a kind of diverticulum as it were.

The ſpleen was ſound; but much leſs than it ought to be, and in every reſpect very ſmall. The trunk of the great artery had, internally, in that part where it adher'd to the vertebræ of the loins, ſome conſiderable bony ſcales: yet the ſame veſſel was very ſound within the thorax; as the heart was alſo.

The urinary bladder was leſs than it ought to have been, in proportion to the ſize of the body. In the urethra was nothing particular obſerv'd; except granules of tobacco as it were, at the orifices of the proſtate gland.

22. As to the other man, who was ſomewhat younger than the former, I have already ſaid, by the way, what his habit of body was; and of what diſorder he died; when I was ſpeaking of his hæmorrhoids, in the thirty-ſecond letter (*x*): ſo that it will be ſufficient to add here, what I ſaw in the upper part of the urethra.

The ſeminal caruncle had, at the ſides of it, granules of the kind I am ſpeaking of; from ſome of which, that were diſſolv'd, as I ſuppoſe, by the

(*u*) N. 6.

(*x*) N. 10. in fine.

moiſture of the place, not only the other parts, which lay near, but even the orifices of the ſeminal ducts, were yellow.

I obſerv'd at the ſame time, that theſe orifices were much larger than they us'd to be; and of an ellyptical figure. And one of them was a little larger than the other.

23. Now as we have begun to treat of the diſorders of the caruncle itſelf, I might; if I had not had occaſion already of doing it above (*y*), or in a former letter (*z*); give you the relation of other diſorders, of the two orifices that are therein, of a contrary nature to thoſe which are juſt now ſpoken of; I mean that I ſaw one of them much narrower than it generally is, and the other quite ſhut up: and even that it was not in my power to diſtinguiſh, and demonſtrate, either of them; nor even that larger orifice of the ſinus which lies betwixt them, by reaſon of the caruncles being defac'd by an old lues venerea.

Now then you have my obſervations, from one extremity of the urethra to the other, according to my promiſe in the beginning: and ſuch as they are, you are at liberty to make what uſe you pleaſe of them; as they not only relate to thoſe who actually labour'd under a gonorrhœa at that time, or had formerly been afflicted with it, but even to thoſe who might ſeem to have been affected therewith (*).

24. It does not eſcape me, that other ſeats have been aſſign'd to this diſorder, even on the outſide of the urethra, and the glands that lie very near thereto; that is to ſay, in the veſiculæ ſeminales, in the teſtes, and even in the urinary bladder and kidnies. Each of which ſuppoſitions I ſhall touch upon ſlightly, and then put the finiſhing hand to this letter.

25. In regard to the veſiculæ ſeminales, beſides the opinion of the older authors; and among theſe of Riolanus, who is quoted in the Sepulchretum (*a*); we ſhould have obſervations of Littre, if he had executed what he promis'd (*b*), when he treated of the gonorrhœa of Cowper's glands.

However, it is eaſy to conceive, that, when the ſeminal canals, which go through the proſtate gland, and open in the caruncle, are eroded, the diſorder may be eaſily communicated to the veſicles.

A proof of this circumſtance was perhaps offer'd to me, at the time, when, in a young man of five and twenty years of age (*c*), I found the veſicles ſo contracted, and without moiſture, contrary to the general habit of that ſeaſon of life; for the ſame virulent inflammation, which had formerly contracted the extremity of one of the ſeminal ducts, and had ſhut up the other, might be propagated into the veſicles, and deſtroy them.

Yet I would not have you ſuppoſe, as often as ever it happens, to any perſon labouring under a long, and terrible gonorrhœa, to emit a bloody ſemen in conſequence of laſcivious dreams, or a ſemen that is fœtid and contaminated with ſordes and pus; I would not have you, I ſay, ſuppoſe in theſe caſes, that the diſorder is neceſſarily propagated to the veſicles: for it is poſſible that purulent, and fœtid ſordes, and a ſmall quantity of blood, may be

(*y*) N. 7.
(*z*) Epiſt. 40. n. 29.
(*) Vid. etiam Epiſt. 60. n. 12.
(*a*) Sect. hac in Schol. ad obſ. 4.
(*b*) Mem. de l'Acad. R. des Sc. a. 1711.
(*c*) Supra n. 7.

ſwept

ſwept away, and carried down, from ulcers that occupy the urethra, the proſtate gland, and ſeminal caruncle, by the ejaculated ſemen, which is in other reſpects ſound.

For it does not always, and of courſe, follow, that the diſorder is communicated to the veſicles, even from the ulcers of thoſe neighbouring and laſt-mention'd parts; notwithſtanding I have ſaid that it may be communicated without difficulty.

26. But is the tranſition of this diſeaſe, from the veſicles into the teſtes, equally eaſy?

That the virulent matter regurgitates from the veſicles into the teſticles, that theſe glands become tumid thereby, and are in part the ſeat of the gonorrhœa, when the diſcharge of the matter is prevented by the force of aſtringent remedies, Wharton has taught us *(d)*; for the words of this author are, although this is not very clearly ſhown in the Sepulchretum *(e)*, nearly what de Graaf *(f)* has not only follow'd, but copied; even at the time, when, to confirm this, he ſays that the gonorrhœa of women, "without doubt, pro-"ceeds from their teſtes," as they have no proſtates.

Yet de Graaf muſt, of courſe, have rejected this confirmation afterwards *(g)*, when he aſſerted that women not only have proſtates, but are without any fluid ſemen in their teſticles.

But if Wharton, or de Graaf, at the time when he follow'd the opinion of Wharton, had call'd to mind the obſervation of Panarolus *(h)*; who ſays that in a woman, who died after a continual gonorrhœa, "a vomica was alſo found "in one of the teſtes;" they would, perhaps, have drawn an argument from hence, in favour of this their opinion; but a very weak one; ſince Panarolus has not entitled that obſervation *(i)*, which is not accurately copied, as Bonetus has done, by prefixing theſe words, "a gonorrhœa generated in a wo-"man by a vomica in one of her teſtes;" but has given quite a different view of it, by ſaying, "a vomica in the teſtes of a woman, from an old gonorrhœa."

For there is no doubt, but the venereal virus may be carried, from the ſeat of an old, and long-continued gonorrhœa, into the ovaria alſo; as well as into other parts; after it has been abſorb'd by the lymphæ-ducts, or by the ſanguiferous veſſels, and has infected the whole maſs of blood: nor does that paſſage from the vagina, through the hypogaſtric arteries, to the ovaria, which has been thought of by Vercelloni *(k)*, pleaſe me any better than many other things which we read in his work; as if the arteries receiv'd any thing, from the parts near to which they paſs, to tranſmit to ſome diſtant parts.

The ſeat of the gonorrhœa, then, is not to be ſuppos'd in the teſticles of women, from the obſervation of Panarolus.

But muſt we not, at leaſt, allow it to have a ſeat in the teſticles of men?

(*d*) Adenogr. c. 31.
(*e*) Sect. hac Schol. 2. ad obſ. 5.
(*f*) Ibid. Schol. ult. ad obſ. 1.
(*g*) De Mulier. Organ. Generat. c. 6. in fine.
(*h*) Pentec. 1. obſ. 14.
(*i*) 6. in ſect. hac.
(*k*) De Morb. Pudend. c. 3. §. 3.

We

We may allow of it with ſomewhat leſs difficulty; ſuppoſing it be confirm'd however, by other obſervations, beſides that of the tumour of theſe parts, when the diſcharge of a gonorrhœa is ſuppreſs'd by aſtringents.

For it is by no means neceſſary, if the tumour of a part follow the violent and ſudden ſuppreſſion of any diſcharge, to have immediate recourſe to this ſuppoſition; that the matter had before flow'd from the now tumid part, or has, at preſent, regurgitated into it.

Yet that, by the improper uſe of aſtringents, the irritation and inflammation may be increas'd, and propagated from the upper part of the urethra, and the adjoining veſicles, by the vaſa deferentia, to the teſticles, and that this may be ſo much the more eaſily, and ſpeedily produc'd, alſo, to ſuch a degree, as the paſſage of the ſemen betwixt theſe veſſels, and the teſticles, is almoſt intercepted, and by this fluid, which is, conſequently, retarded in its courſe, the teſticles are diſtended; and finally, that the matter, which was diſcharg'd by the urethra, may enter the general channel of the blood, and be carried therewith into the teſticles; we do not deny.

But you ſee that there is one of theſe methods, I mean the ſecond, by which you may conceive of the teſticles being tumid, and yet not infected with a venereal contagion; and conſequently not become the ſeat of the virulent gonorrhœa.

27. And the paſſage from the urethra to the kidnies, is not a little longer than to the teſticles: and yet, that the diſorder, if it is continued for a very long time, may creep to a diſtance from the urethra, "and infect the bladder "and ureters, and at length even the kidnies themſelves," is affirm'd by Dodonæus (*l*).

For I have obſerv'd, that they are the words of this author, which you will read in the firſt part of the Scholium, to the fourth obſervation, of this thirty-firſt ſection of the Sepulchretum, which is taken from Dodonæus himſelf; but neither there, nor in the title to which we are refer'd, *De Hypogaſtrii Doloribus*, that is in the twenty-third ſection, where it is given under obſervation the ſixth, article the fourth, is it wholly copied: ſince neither in one place, nor the other, mention is made of the whole urethra being ulcerated, and fill'd with coagulated blood.

But that the diſorder ſhould creep ſo far as to the kidnies, "a long con-"tinuance" is, as you ſee, requir'd by Dodonæus; and the gonorrhœa, which is ſpoken of in that obſervation, had laſted eighteen years.

However, in what manner, where the bladder is ulcerated, the diſorder may be communicated ſtill much ſooner, by the urine, to the ureters, and kidnies; I have already ſhown in a former letter (*m*): from which place you might prudently ſelect ſome things as joint cauſes, if there were any occaſion, and accommodate them to this obſervation of Dodonæus; not to mention three of mine which are not far unlike it.

For, in ſo long-continued, and ſo ſevere a gonorrhœa, what a dyſuria, and what a ſtrangury, there muſt have been ſometimes, is ſufficiently apparent; and the bladder being *plane rigida*, quite rigid (not *plane frigida*, quite cold,

(*l*) Medic. Obſervat. c. 41.
(*m*) 42. n. 23.
(*n*) Supra, n. 15. & Epiſt. IV. n. 19. & XLII. n. 40.

as,

as, by a typographical error, it is moſt ſtupidly perverted in the Sepulchretum) " could neither be diſtended nor contracted."

But that the kidnies may be vitiated from long and repeated gonorrhœas, without the bladder's being affected, appears very clearly, and evidently; even from that hiſtory of Valſalva, which I gave you in the beginning of the ſame letter (*o*); the diſorder, conſequently, not creeping on from the urethra, but entering into the paſſages of the blood, and paſſing on, through thoſe, to the kidnies.

However, be this as it will; I ſhall not ſuppoſe the bladder, the ureters, and the kidnies, to be the ſeat of the gonorrhœa for that reaſon; not only becauſe no ſemen, nor fluid relating thereto, flows down from thoſe parts; but alſo becauſe an ichor diſtilling therefrom, cannot, unleſs the ſphincter of the bladder happens to be injur'd, come, at any time, into the urethra, by drops, without urine, and bely a gonorrhœa. But it is time to conclude. Farewell.

(*o*) N. 2.

LETTER the FORTY-FIFTH

Treats of the Deſcent of the Uterus, and likewiſe of the Aſcent, as Women call it.

WHAT Hippocrates has ſaid (*a*); that " the uterus, when mov'd " out of its natural ſituation, to any other part, brings on diſeaſes, " whether it proceed outwards, or be retracted internally;" will be the ſubject of this letter, which will anſwer to the two next ſections of the Sepulchretum; that is, to the thirty-ſecond, *De Uteri Procidentia Deſcenſu & cæt.* and the thirty-third, *De Hyſtericis Affectibus, Suffocatione & cæt.*

For I thought it proper, to compriſe theſe two ſpecies of diſorder in this one letter, leſt it ſhould, perhaps, be too ſhort; ſince Valſalva has left no diſſections, which relate to theſe diſorders, and I have very few: I hope, however, you will receive theſe, ſuch as they are, with a willing and attentive mind, as you have receiv'd thoſe that I have ſent you hitherto.

2. Firſt then, in reſpect to the prolapſus, or deſcent, of the uterus, you know very well that, with Fernelius (*b*), there was then a deſcent of the ute-

(*a*) De loc. in hom. n. 59. (*b*) Pathol. l. 6. c. 16.

rus,

rus, when it had fallen downwards, though it had not yet fallen outwards; and a prolapſus, when it is inverted and thrown out of the body; which can happen only from the great violence of labour-pains: except that it may ſometimes, alſo, happen, from the raſhneſs of an imprudent midwife, who takes away the ſecundines with violence.

And he would have treated of the ſubject fully, if he had not omitted another kind of prolapſus; I mean that kind in which the uterus does not invert itſelf, but being ſhut up within the inverted vagina, is prolaps'd outwards.

For in the deſcent of the uterus alſo, the vagina muſt of courſe invert itſelf, in the ſame proportion as the uterus deſcends. And this part inverts itſelf, from the ſame external, or internal cauſes, that give occaſion to the deſcent of the uterus; that is to ſay, thoſe which at the ſame time diſtend, or relax the ligaments of both theſe parts, and among theſe cauſes, how we may reckon the uterus itſelf, and the vagina, I ſhall ſhow you below *(c)*.

Beſides theſe true deſcents, or prolapſes, of the uterus, there is alſo a prolapſus of the vagina; not only the more ſlight, but ſometimes ſo great a one, and of ſuch a kind, that it may be taken for the prolapſus uteri, which I took notice of in the ſecond place; one of which kind you will ſee deſcrib'd, and repreſented in a plate, by Jo. Gulielmus Widmannus *(d)*; who found it to be made up only of the internal coat of the vagina.

3. All theſe ſpecies of diſorder we, alſo, allow to have been taken notice of by the ancient phyſicians; and even by their moſt ancient maſter Hippocrates; if you except that kind of prolapſus, in which the uterus inverts itſelf.

Yet that this was hinted at by Celſus *(e)*, I think I have ſufficiently ſhown in my fourth epiſtle upon him. And that, in the books of Hippocrates, not only the prolapſus vaginæ is taken notice of, under the title of "the uterus "falling outwards *(f)*," the cure itſelf ſhows; but alſo, that the true deſcent of the uterus, and the ſecond kind of prolapſe, are taken notice of, the following words ſhow: "but if the uterus is very near to the external parts" *(g)*, and "if the uterus falls quite out of the pudendum; it hangs down like "a ſcrotum *(h)*: but if the os uteri fall down on the outſide of the puden-"dum, & cæt." *(i)*.

As almoſt all theſe things were juſtly, and deſervedly, preſerv'd by their deſcendants, without any doubt, down ſo low as the remembrance of our fathers; and as even many perſons, ſome at one time and ſome at another, had not doubted that the uterus, when prolaps'd, has been extirpated, without deſtroying the woman; and that not very ſeldom neither, though, to confeſs the truth, with too great a credulity; not to ſay any thing of thoſe who had gone ſo far, as to contend, that children, by the ſpecial grace of God, had been procreated by theſe women afterwards; there aroſe at length, as you will learn from the Sepulchretum, ſome men ſkilful in anatomy, and ſurgery; who, although they, with great juſtice, argued againſt the exceſſive

(c) N. 12.
(d) Eph. n. c. cent. 8. obſ. 98.
(e) De Medic. in Præfat.
(f) De Exſect. fœt. n. 4.
(g) De Morb. Mulieb. l. 2. n. 37.
(h) Ibid. n. 38.
(i) Ib. n. 39.

credulity

credulity of others, yet did not run counter to it with the greateſt propriety: as they not only granted ſome things, which they ought not to have granted, but, moreover, even denied thoſe very ancient, and found dogmata, relative to the prolapſus uteri; and what is ſtill more ſurprizing, made ſome celebrated maſters in both theſe faculties, and in medicine, their followers and ſectaries.

4. For that the uterus has been, ſometimes, really cut out, "in an extraordinary and very rare caſe," yet that the woman has ſurviv'd, why ſhould we not rather ſay with Georgius Wolfg. Wedelius (*k*), than that it never has been, with Jo. Guilielmus Pauli (*l*), who treats of this ſubject, in other reſpects, learnedly?

For it is too hard to pronounce, that, out of ſo many who have aſſerted this to have been done, or ſeen, by them, there could not be any one that was not deceiv'd?

And certainly if the obſervation of Slevogtius (*m*), had been then publiſh'd, or had come to his hands; he would at leaſt, as well as Abraham Vater (*n*), have acknowledg'd this to have been free from all deceit.

For Slevogtius, upon cleanſing, from its ſordes, a large body, that was cut out from the pudendum of a woman; which he ſuppos'd to be an excreſcence; contrary to his expectation found it to contain the uterus, like a thick bag, together with the remains of its tubes, and in a natural ſtate: and this was ſeen by the profeſſors at the univerſity of Jena, by moſt other phyſicians, and by a hundred ſtudents: yet this woman was very happily reſtor'd.

But if you interrupt me by inquiring, why neither this woman, nor any other, was immediately carried off; either by a conſiderable hæmorrhage, from ſome of the larger veſſels of the uterus being cut through, or, ſoon after, by the large wound, which, when the bladder hangs downwards, together with the uterus, muſt neceſſarily be inflicted thereon, as is remark'd by Ruyſch (*o*); to the firſt, I ſhall, perhaps, anſwer, that the veſſels being long diſtracted, and therefore contracted, and a corruption moreover gradually helping the ſeparation, as is the caſe in the fleſh, that is dead from a ſphacelus, no great quantity of blood could be pour'd out: and to the ſecond, either that the vagina was inverted only in its upper part, or was not inverted in the external coat, whereby it is join'd to the bladder; but only in its internal coat; ſo that it could not draw the bladder down with it.

But if you cannot approve of theſe replies, and ſuppoſe the circumſtances to have happen'd; for I am not univerſally pleas'd with them myſelf; you will, of yourſelf, endeavour to find out better hypotheſes: for we muſt take care that we do not ſeem to diſtruſt Slevogtius, or any other author of eminence and credit, who aſſerts that he had examin'd the caſe, either in the body that had been extirpated, or in the carcaſe after death.

I could wiſh Molinetti had made this examination (which he could have done eaſily and well) as he ſays (*p*), that "he had always experienc'd" the

(*k*) Diſſert. de Procid. Uteri. c. 4.
(*l*) Progr. addit. Diſſ. Schacheri de Placentæ Morbis.
(*m*) Vid. in calce obſ. Van Sanden de Prolapſu Uteri.
(*n*) Diſſ. de Sarcom. e Pundend. Muliebr. & cæt. theſ. 7.
(*o*) Theſ. Anat. 8. n. 102.
(*p*) Diſſert. Anat Pathol. l. 6. c. 12.

method of amputating the uterus, " to be very ſafe; and that he had " made uſe of it many times, eſpecially in old women:" in whom, as the inverſion of the uterus, whereof he ſays theſe things, is more rare, ſo ought the examination to be made with the more accuracy after amputation; leſt any error ſhould have crept in: the ſuſpicion of which, that perpetual felicity of cure ſeems to increaſe.

There is even another much more recent obſervation; of the uterus being inverted, and ſucceſsfully cut out; in which you would wiſh that the examination, after exſection, had not been omitted; as before this, the caſe is ſaid to have been ſimilar to that related from Wepfer, in the Ephemerides of the famous Academy *Naturæ Curioſorum Dec.* 2. *A.* 5. *Obſ.* 50; where you not only do not find the uterus inverted, but even an excreſcence, which Wepfer himſelf had ſhown (*q*) might belong rather to the vagina, than to the uterus: and he even affirm'd it to have belong'd thereto, from what happen'd to the woman, in the ſpace of two years afterwards (*r*).

Nor indeed ought we to require an accurate examination of the uterus, when inverted, only, but alſo when prolaps'd outwardly, with the vagina, in the living and dead body; eſpecially after it is certain from the obſervation of Widmannus, which has been quoted (*s*), that the prolapſus of the inverted vagina alone, may ſometimes ſo impoſe upon the obſerver, as to make him believe that the uterus was prolaps'd within it, at the ſame time.

For if you compare the figures of Ruyſch (*t*), which expreſs this ſecond caſe, with the figure of Widmannus, which repreſents the firſt, you will find no difference; to omit other things; in that which was conſider'd as the chief ſign to diſtinguiſh one from the other.

That is to ſay, as the os internum uteri, is in the middle and lower part, of the prolaps'd body, in the figures of Ruyſch; ſo you would alſo ſuppoſe that you perceive it in that of Widmann: whereas the diſſection will ſhow, that it was only an appearance, made up of the vagina; as by this the internal coat of the vagina, being much thicken'd, was itſelf found to be prolaps'd; but the uterus was found in its natural ſituation.

By what means then, you will ſay, ſhall we diſtinguiſh the caſe in a living woman? A thing of the laſt moment, certainly, where the queſtion is of amputating the tumour!

The ſame enquiry has been made by Abraham Vater (*u*), as by you. But he has determin'd nothing: and has even declar'd, that any obvious ſign is uſeleſs, depending upon that very diſſection of Widmann.

To me however, from another certain circumſtance, which, being obſerv'd before the diſſection, by Widmann, made him begin to doubt whether that which ſeem'd to be the uterus was really ſo or not; to me, I ſay, a thought aroſe, of taking a ſign from this very circumſtance, whereby we may know whether ſuch a tumour be made up of the uterus or not.

For without doubt, if a long probe be introduc'd through the orifice, which appears to be that of the uterus, and the ſame thing happens to the introducer, that happen'd to Widmann; I mean that the probe may be

(*q*) In Schol. ad n. 4.
(*r*) Dec. ead. 2. a. 7. obſ. 54.
(*s*) Supra, n. 2.
(*t*) Obſ. Anat. Chir. fig. 2. 8. 11.
(*u*) Diſſert. de Polypo ex Utero egreſſo theſ. 10.

puſh'd,

puſh'd, without any obſtacle, far beyond the natural length of the uterine cavity, and yet not come to the full extent of the prolaps'd body; and the tumour is, at the ſame time, not eroded by an internal putrefaction; a proof, in my opinion, will be given, that this orifice does not belong to the uterus, but only to the vagina; and ſuch a proof as, to my apprehenſion, ought not, in an ambiguous, and very difficult caſe, to be deſpis'd: but if the contrary happens, to the contrary concluſion may we fairly be biaſs'd.

And if they who have contended that the uterus never deſcends, nor is prolaps'd, had examin'd the caſe very frequently in dead bodies by diſſection; they would have thought, that we were not under a neceſſity of refering all the obſervations, of others, to the prolapſes of the vagina alone, or to the excreſcences of that, and the os uterinum: as if, in fact, it were impoſſible, that what they themſelves had not ſeen ſhould ever have been ſeen by any other perſon.

5. Indeed we very readily, and without any reluctance, grant theſe gentlemen, that they who aſſert their having cut away the uterus, have been, almoſt all of them, deceiv'd by excreſcences of that kind; or by prolapſes of the vagina: and this alſo muſt be confeſs'd, whether they are willing or not, by thoſe who have told us that the women have brought forth children after the exciſion; unleſs they ſhould perhaps contend, that two of the moſt extraordinary things imaginable, had happen'd in one and the ſame woman; firſt, that ſhe ſhould ſurvive the exciſion of the uterus; and ſecondly, that ſhe ſhould have a double uterus from the original formation.

But, as I had begun to ſay, does it follow from this; that ſo many ſurgeons have been deceiv'd in taking excreſcences, and prolapſes of the vagina, for the uterus; does it follow, I ſay, from hence, that all have been equally deceiv'd, who have aſſerted that they have ſeen a deſcent of the uterus, or a prolapſus thereof?

That this certainly does not follow, not only reaſon itſelf evidently ſhows; but alſo a great number of obſervations, which may be added to ſome that are produc'd in the Sepulchretum, demonſtrate.

Slevogtius (*x*) will point out theſe obſervations, though I am ſilent; and Van Sanden (*y*) likewiſe; who is very full in collecting thoſe obſervations, which belong to this ſection of the Sepulchretum; that is the thirty-ſecond: in the additamenta of which ſection, it is ſurprizing, in the firſt place, that thoſe obſervations ſhould be wanting, which might, at that time, have been taken from the Centuria of Ruyſch; and in the ſecond place, that we do not meet even with the obſervation which we find in that well known book of Bohn, and which I ſhall take notice of preſently.

To theſe you will add thoſe that were not then extant; part of which have been already refer'd to, and part of which will be refer'd to below; and others beſides theſe, either of the deſcent of the uterus, or of the prolapſus of it; to which belong one of Vater's (*z*), and one of the celebrated Philadolphus Boehmerus (*a*): both of which, as well as the others, are very clearly confirm'd by diſſection.

(*x*) Diſſert. de Muliere gravida lapſu Vag. Uteri, & cæt. §. 12.

(*y*) Obſ. ſupra ad n. 4. cit.

(*z*) Diſſert. de Polypo & cæt. ibid. cit. theſ. 8. in fine.

(*a*) Diſſert. de Prolapſ. & Inverſ. Uteri, in Præfat.

6. However, although "the ſight of an inverted uterus, is too rare" to phyſicians, and ſurgeons, as I have written in that epiſtle upon Celſus (*b*); and although de Graaf has ſaid (*c*), that "this happens very rarely;" yet that this is not very rare to midwives, and eſpecially to the unſkilful, and happens very often in the child-bearing women of ſome countries, I underſtand from books; and in particular from the ſecond Decade (*d*) of Ruyſch's Adverſaria.

For it appears plainly from thence, that the uterus is not always forc'd down, and inverted, by the unſkilfulneſs of midwives; nor from the violence of pains, at the time of child-bearing; but alſo from the attempts made "to unload the uterus, after birth."

There is another cauſe beſides, but, in regard to this effect, far more rare; I mean when a very large excreſcence, that had form'd itſelf upon the fundus uteri, inverts the uterus by its weight; and draws it downwards, in the manner that Sandenius has propos'd (*e*).

And it is certain that anatomy ſhows the uterus to have been inverted; for within its cavity, form'd by that ſurface, which had been before external, the ligaments of the uterus, the Falloppian tubes, and the ovaries, have been found to be contain'd.

And in this way you will very eaſily conceive how it could happen; in the obſervation transferr'd into the Sepulchretum (*f*), from Henricus ab Heer, upon a uterus cut out by a mountebank; that a conſiderable part of the inteſtine colon was prolaps'd, and was amputated together with it; in conſequence of being contain'd within its cavity, when inverted.

You will alſo gather from an obſervation of Sandenius (*g*), that a woman may ſometimes live many weeks with the uterus inverted, and not replac'd; and even from the cure of Genſelius (*h*), that the woman has been ſav'd by reſtoring the uterus, at length, to its ſituation, after having been diſplac'd for many days.

But theſe things are rare, if you compare them with ſo many other caſes that were ſpeedily fatal; to which we muſt add that produc'd by Bohn (*i*), of a woman, who had brought forth her firſt child, dying within leſs than an hour after the uterus had been violently drawn down from its ſeat, which was found to be empty; and that alſo related, from Chapman, by Boehmerus (*k*) already quoted; in which, if I rightly underſtand it, the woman died ſtill ſooner from the like accident.

The other prolapſus of the uterus likewiſe, that is without inverſion, is neither ſo frequent, that "Blaſius, in his commentaries upon Veſlingius, related "a whole catalogue of the obſervers of it," as de Graaf has blunderingly written (*l*); nor yet, on the other hand, ſo rare, that "nobody beſides "Ruyſch" has ever ſeen it; which would never have eſcap'd Widmann (*m*),

(*b*) IV.
(*c*) De Mulier. Organ. c. 10.
(*d*) C. 10.
(*e*) Obſ. ſupra ad n. 4. cit.
(*f*) Sect. hac obſ. 6.
(*g*) §. 27.
(*h*) Act. Erudit. Lipſ. A. 1716. M. Maj.
(*i*) De Renunc. Vulner. ſect. 2. c. 4. verſ. finem.
(*k*) Diſſert. ſupra ad n. 5. cit. §. 13.
(*l*) C. cit. 10.
(*m*) Obſ. ſupra ad n. 2. cit.

if

if he had not forgotten, as frequently happens in ſuch caſes, the obſervations of Platerus (*n*), and Peyerus (*o*).

The deſcent of the uterus rather, and the prolapſus of the vagina chiefly, occurs pretty frequently. It has therefore happen'd, that I have never heard of the prolapſus uteri, when inverted, more than once, in this country; and of the uterus, without inverſion, not ſo much as once.

But the deſcent of the uterus, and the prolapſus of the vagina, I have ſometimes ſeen, not only in the living body, but made obſervations upon, in the dead.

7. Being aſk'd to examine the genitals of a woman of reputation, about five and twenty years of age, in order to determine the nature of a certain body, of a round figure, like a penis, which hung down within the vagina; I immediately perceiv'd it to be the cervix uteri, which had fallen down below the middle of the vagina.

The oſculum uteri, as, though the woman was married, ſhe had never born children, was narrow, and almoſt in the ſhape of a circle: and from thence I ſaw a little blood proceed; for the woman had lately menſtruated; ſo that if any one ſhould doubt whether the menſtrual blood comes from the uterus, or not, he might have been convinc'd by this inſpection.

But now I will tell you what we have obſerv'd in dead bodies; firſt in beaſts, and after that in women; for by this means it will be clear and evident, that theſe diſorders are brought on, not only by weight, but by other cauſes alſo, which act on our bodies, according to the mechaniſm thereof.

What I ſhall firſt relate I formerly receiv'd from Valſalva.

8. When he was diſſecting a bitch, which died pregnant, he found the vagina inverted; and the adjoining uterus conſiderably nearer to the orifice of the vagina than uſual. And this change in the ſituation of the uterus was alſo confirm'd by the cornua, and eſpecially the right; in which were three young whelps. For they had follow'd the uterus towards the vagina, and not at any great diſtance.

9. A cow, which had been ſubject to a prolapſus of the vagina, the maſter of her would have to be kill'd for this very reaſon, when ſhe was advanc'd ſeven months in her pregnancy; fearing leſt ſhe ſhould die in bringing forth her young; ſo that her viſcera, and fleſh, would be ſold at a very low price.

Having got the vagina, together with the uterus, I found the former inverted to ſome conſiderable extent; where it is connected with the extremity of the cervix uteri. But in that part it was not without ulceration. What I obſerv'd in the uterus and the fœtus, was agreeable to their nature; for which reaſon it does not belong to this place.

10. But as, in theſe brute animals, the diſeaſe could not be imputed to the weight forcing or drawing downwards; ſo in women I believe that it frequently may be: as it might in her of whom I ſhall ſpeak immediately.

11. An old woman of Bologna had already been hemiplectic many years, ſo as not to be able to move one ſide of her body; when at length ſhe loſt the power of motion in the other alſo. The ſame woman was ſaid to

(*n*) L. 3. (*o*) In Additam. ad hanc Sepulchr. ſect. obſ. 5.

have a certain round body prominent from her genitals. Laſt of all ſhe was ſeiz'd with an inflammation of the thorax, and died in this hoſpital; where we diſſected her body about the year 1704.

The thorax we did not meddle with; being taken up with other diſſections.

The head, which was open'd by ſome of my friends, ſhow'd nothing worthy of notice; except ſerum betwixt the dura and pia mater.

I myſelf examin'd, with ſome accuracy, the thyroid gland; as it was tumid, and very hard; and the belly likewiſe, as to what related to the uterus, and the other genitals. What I found in that gland is ſufficiently ſhown elſewhere (*p*).

But in the belly, I obſerv'd that the fundus uteri had a ſomewhat lower ſituation than it generally has; yet not ſo much as to make me ſuſpect, that the orifice thereof could come where it really did, as I ſhall tell you preſently.

On the outſide of the labia of the pudendum, which was much dilated, a body of the length of three or four inches was prominent: this body was of a cylindrical form, very thick, made up of a ſubſtance, ſimilar to a ligament, and ſmooth; unleſs where it was ulcerated at the bottom.

That it was the vagina inverted I readily perceiv'd. Wherefore, at the upper anterior part of this body, was the orifice of the urethra; and under this, on each ſide one, were foramina of lacunæ conſiderably dilated.

And in the middle of the lower part was an orifice, that ſoon led to the oſculum uteri, through which I paſs'd a probe, without any difficulty, quite to the upper parietes of the cavity of the uterus.

Being ſurpriz'd at this unuſual length, I cut into the vagina; and within it I found the cervix uteri contain'd, having become very much longer than it naturally is: nor was this to be wonder'd at; ſince the parietes of the cervix itſelf, and the fundus uteri, were not firm, as they are in their natural ſtate, but extremely lax, and flaccid: as all the other parts, that had their ſeat in the pelvis, and belong'd to the uterus, were likewiſe.

12. It is evident that the uterus, whoſe fundus was ſomewhat lower than uſual, had been drawn downwards by the weight of the vagina thus thicken'd; unleſs the cervix, from the very beginning of the diſorder, ſuppoſe, was of ſuch a laxity, as to ſuffer itſelf to be drawn downwards more than the other parts, and be diſtended into that extraordinary length: for I do not imagine that length of it, which Vaterus (*q*) tells us was ſeen by him; when, on one hand, the prolaps'd vagina drew the uterus downwards, and on the other the enormous ſize of the ovarium prevented it from deſcending any farther; to have been comparable with this.

But in another woman, whom I deſcrib'd to you in the thirty-fourth letter (*r*), the increas'd thickneſs, and, conſequently, increas'd weight, of the corpus glandoſum urethræ, had indeed drawn the uterus ſomewhat downwards: but becauſe the cervix was not of ſuch a laxity, the orifice had not deſcended ſo far; for which reaſon this very corpus glandoſum, being perforated,

(*p*) Epiſt. Anat. 9. n. 39.
(*q*) Diſſ. de Sarcom. & cæt. ſupra ad n. 4. cit. theſ. 3.
(*r*) N. 11.

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in the middle of its lower part, with the orifice of the urethra, reſembled the orifice of the uterus. Nor, indeed, could the weight of the uterus be there accus'd; as it was but ſmall, and the parts of it but thin.

Yet in ſaying this, I do not neceſſarily deny, that a uterus, overloaded by a weight which is preternatural, does, in other women, invert the vagina; and hurry it downwards together with it; a very clear inſtance of which you have in the obſervation of Hartmann, that is related among the Additamenta to the twenty-firſt ſection of the Sepulchretum (*s*).

You ſee then, that not only the weight of the vagina, by diſtracting the ligaments of the uterus, ſometimes draws this downwards to the lower parts; but alſo that the weight of the uterus, at other times, by diſtending the parts which connect the vagina, inverts this cavity, and draws it downwards with itſelf.

For both the ligaments of the uterus, and the connecting parts of the vagina, do ſuffer themſelves to be diſtracted; as they are membranous, and frequently very lax from internal cauſes; and this diſtraction, whereof we ſpeak, is often known to be coming on gradually, and for a long time together.

That prolapſus uteri, which Peyerus (*t*) has deſcrib'd, was certainly large; as the uterus was puſh'd out at the pudendum, and hung within the inverted vagina. "Nevertheleſs," ſays this excellent anatomiſt, "the ligaments of "the uterus, and bladder, were not ruptur'd, but only relax'd."

And he ſaid, "the ligaments of the bladder, becauſe the urinary bladder "had fallen down, together with the uterus, and chang'd its ſituation;" as he found by diſſection; which circumſtance, though it then ſeem'd to him "wonderful, and altogether new," Ruyſch (*u*) has ſince admoniſh'd will always neceſſarily happen, in prolapſes of this kind.

13. And if theſe caſes ſeem to be very ſurprizing, which are, nevertheleſs, generally brought on by degrees, as I have ſaid, and in a long courſe of time; that certainly deſerves our admiration, which, though it is much leſs, is brought about very ſpeedily, and in a ſhort time, by nature itſelf.

For in the birth; to uſe the words of Slevogtius (*x*); "the oſculum uteri "comes very near to the orifice of the vagina, and diſtends it, from a long "pliable canal, into a large circle; correſponding to the ſize of the embryo "which is to paſs through it."

And, indeed, where, by reaſon of the thickneſs of the fœtus, and the narrowneſs of the paſſages, the birth is brought on but ſlowly, and with conſiderable difficulty; "it then frequently happens, that, by the continued ex-"ertions, of the woman, to bring on the delivery, the opening of the ma-"trix is evidently propell'd by the head of the infant, and carried to more "than the length of an inch, or two, on the outſide of the vulva:" for this appearance, which Munnickius had ſuppos'd to be very rare; Slevogtius teſtifies "had frequently occur'd to himſelf; and had not portended any miſ-"chief."

(*s*) L. 3. obſ. 54.
(*t*) Sect. hac 32. Sepulchr. obſ. 5.
(*u*) Loco ſupra indicat. ad n. 4.
(*x*) Diſſert. ſupra ad n. 4.

But this is ſtill more ſurprizing; that, though a gravid uterus has hung down within the inverted vagina, beyond the lower parts of the pudendum, the fœtus has, nevertheleſs, been brought forth.

And that obſervation of Harvey *(y)* himſelf, which is, as far as I know, the firſt of the kind, you will add to the others that are collected by Sandenius *(z)*: whereto that alſo belongs, which was afterwards propos'd by that excellent profeſſor at Helmſtad, Fabricius *(a)*.

And although ſuch a number of obſervations may ſerve to convince thoſe, by whom the prolapſus uteri, within the inverted vagina, was denied; in the ſame manner as that obſervation may, which the celebrated Friedius communicated to Widdmann *(b)*; yet here I would have you attend only to thoſe of them, that repreſent the uterus to be thus prolaps'd in the very birth.

For you will be leſs ſurpriz'd after this, that thoſe diſtractions of the ligaments I was ſpeaking of *(c)*, which come on gradually, and in a long ſpace of time, may happen; eſpecially as women thus affected, are not without a troubleſome ſenſation, that correſponds to theſe diſtractions, and either do not diſcharge the contents of the rectum, or bladder, or both of them, with their uſual facility: which difficulty, in a certain woman whoſe vagina was prolaps'd outwardly; as it was reliev'd by raiſing up this prolapſus; Slevogtius *(d)* accounted for, not ſo much from the compreſſion of thoſe meatuſſes, as from the diſtortion thereof, on account of the annex'd fibres of the pendulous vagina, drawing them in an oblique direction; and by this means conſtringing, and making narrow, their cavity.

However, he made the connexion of the vagina much larger than it really is; as he thought *(e)* "that the vagina was very cloſely connected, in its "whole length, to the ſubjacent inteſtine."

14. It is true, I do not deny that the doubts, which have been already advanc'd by me *(f)*, cannot be entirely remov'd from my breaſt; except by a previous and very accurate examination, of the bodies, of thoſe who labour'd under theſe diſeaſes: an opportunity of which examination I have not had for a long time.

Among theſe I, without doubt, confeſs the prolapſus vaginæ to be the moſt frequent; and grant that it has impos'd upon many, for a prolapſus of the uterus.

But does the internal membrane of the vagina, relax'd, and extended, by an afflux of humours, fall down of itſelf only? Or do both of them fall down?

That the former "happens very frequently," not only many authors, among whom is Wedelius *(g)*, aſſert; but even, according to the aſſertion of Widmannus *(b)*, "all agree."

And indeed, where you put the caſe in this point of view, you make ſome

(y) In Addit. ad Exercit. de Generat. ubi de Partu.
(z) Obſ. ſupra ad n. 4. cit. §. 6. & ſeq.
(a) Program. quo facil. Extract. Fœt. in Procid. Uter.
(b) Obſ. ſupra ad n. 2. cit.
(c) N. 12.
(d) Diſſert. modo indicat. §. 16.
(e) Ibid §. 11.
(f) Epiſt. 33. n. 15.
(g) Diſſert. ſupra ad n. 4. cit. c. 1 & 2.
(b) Obſ. ſupra ad n. 2. cit.

of

of the difficult circumſtances eaſy to be underſtood; one of which I have hinted at above (*i*); and another is pointed out by Wedelius (*k*).

But in the mean while; eſpecially if the prolapſus is of a great length, and ſtill more, if, as Widmannus (*l*) propoſes it, the internal membrane, being torn away, from the upper part to the lower, and reflected downwards, occaſions the prolapſus; you muſt, of courſe, fall into ſome of theſe doubts, which I have ſaid are already pointed out by me.

Yet the inverſion of all the parietes of the vagina, at one time, is not very eaſy to be explain'd.

Beſides, ſuppoſe which you will of theſe two circumſtances, it is not ſo clear how theſe parts, by the aſſiſtance of remedies, can, ſometimes at leaſt, recover their former ſituation, and remain therein; after ſuch diſtractions of the ligaments, and connecting parts.

15. One remedy made uſe of by art; beſides others, both externally and internally applied; is that of peſſaries conſtructed in the form of a ring, or any other ſhape, which has a foramen to it. And we muſt not omit to make uſe of this kind of remedy here alſo; as we frequently muſt in the prolapſus of the inteſtinum rectum.

For there are two circumſtances, in this caſe, which render the cure more difficult than in the other; firſt, the inevitable weight of the uterus, when it has fallen down before, again inverting the replac'd vagina; and ſecondly, the ſpincter muſcle keeping the orifice, of the vagina, ſhut up neither ſo ſtrongly, nor ſo cloſely, as the ſphincter ani does the orifice of the inteſtine.

And for theſe reaſons, then, the vagina is again puſh'd outwards, reſembling either an inteſtine, or ſome other body; as, for inſtance, from what we have ſeen in Hippocrates (*m*), " the ſcrotum;" which it alſo reſembled in the obſervation of Harvey (*n*).

That a diſorder which is indecent, or, certainly, inconvenient, may be remov'd, or at leaſt conceal'd, theſe peſſaries have been invented. And if all the inſtruments of this kind; of whatever form, or ſtructure; that have been yet known, " were ſo far from curing" a prolapſus uteri, " that they ge- " nerally made it worſe;" as I lately read in the works of a learned man; they would have been long ago rejected by phyſicians, and ſurgeons, and even by women themſelves.

I, however, obſerv'd this inſtrument to be rather uſeful, when I diſſected a woman who had been ſubject to this diſeaſe; as I have already written to you (*o*).

Yet I do not deny that where they are introduc'd with violence, or improperly, and fooliſhly conſtructed, they may either bring on death, as was ſeen to happen by Benevoli (*p*), or ſome detriment at leaſt; eſpecially if the women, nevertheleſs, perſevere a very long time in the uſe of them: and do not ever take them away, even for the ſake of wiping and cleaning them.

(*i*) N. 4.
(*k*) Diſſ. modo indicata c. 4.
(*l*) Obſ. indicata.
(*m*) Supra n. 3.
(*n*) Loco ſupra ad n. 13. indicato.
(*o*) Epiſt. 22. n. 22. in fine.
(*p*) Oſſervaz. 3.

You may ſee, in the Commercium Litterarium (*q*), what happen'd to two women for the ſame kind of reaſons.

You will find that one of them; having introduc'd a ball of thread, or worſted, wound up together, had a tartareous matter, as it were, concreted upon it, to ſuch a height, as every where to equal three fourth-parts of an inch; and of ſuch a hardneſs, that it could not be chipp'd off without an inſtrument for that purpoſe; and, finally, that it gave ſuch uneaſineſs as already to have brought on a very ſevere ſtrangury: and that the other had an ulcer of the vagina, and the neighbouring inteſtine, in conſequence of an iron peſſary; notwithſtanding it was cover'd over with wax, as that ball of worſted had alſo been.

To theſe I will add an obſervation of my own, which although I ſhould more willingly have related, among other diſorders whereto it more peculiarly belongs; if I had made it before I treated of them; yet I did not think proper that it ſhould be omitted in this place, as it relates to the preſent ſubject, in the latter part of it at leaſt.

16. A woman, of a middle age, and ſtature, and of a pretty good habit of body, labour'd under no other diſorder, but a catarrh, from the injuries of the cold air, when a fever was added to it; on account of which ſhe was immediately brought into the hoſpital.

For this fever was acute, and join'd with a great difficulty of breathing, a redneſs of the cheeks, and a very troubleſome ſenſe of weight in the thorax; together with a ſomewhat hard pulſe.

Every thing that was neceſſary was done; but without any effect. To expectorate was the only thing ſhe deſir'd; yet ſhe never could.

At length her pulſe became very low, and intermittent; and her reſpiration ſo difficult, that ſhe could not lie down in the latter part of her diſeaſe. Wherefore ſhe died, on the fifth day from the time ſhe began to be feveriſh; which was about the middle of March in the year 1748.

The carcaſe was diſſected in the hoſpital (for the ſake of the ſtudents) accurately and in order. But I will here firſt declare to you, what I found preternatural in the thorax and head.

Although the lungs were turgid, and almoſt every where cloſely connected to the pleura, that lin'd the ribs; and eſpecially on the left ſide; yet from the left cavity of the thorax, a ſerum; which you would very readily have ſuppos'd to be white from a mixture of pus, if there had been the leaſt token of pus in that part; flow'd out in ſuch a quantity, as the ſtate of the left ſide of the diaphragm, which was not vaulted, but rather depreſs'd (when we look'd upon it from the cavity of the belly) had before argued.

Part of that kind of ſerum was particularly confin'd betwixt the left lobe, and the pleura, where it inveſted the ribs, pretty near to the middle vertebræ of the thorax; and that for a conſiderable tract; in which tract, both the lungs, and the pleura, had white concretions adhering to them, like very thick membranes: and in that part only the lobe was found to be grown ewh a hard, and denſer than uſual.

Yet the patient had not complain'd of any peculiar uneaſineſs in her back;

(*q*) A. 1733. hebd. 10. n. 5. & a. 1738. hebd. 32. n. 1. ad part 7.

nor

nor yet of any pungent pain; although the pleura was, in both ſides, of a roſy redneſs for a conſiderable ſpace: nor, finally, had ſhe at any time complain'd; for I inquir'd particularly into all theſe circumſtances; of a tremor of the heart, or ſwoonings, either in the hoſpital, or at home; notwithſtanding I found thoſe appearances in the pericardium, that I am about to deſcribe.

The pericardium was large, and full of a ſerum, of that kind which was found in the left cavity of the thorax; ſo that, at firſt ſight, you would have imagin'd it was ſome large abſceſs, and not the pericardium, which was open'd.

This ſerum being exhauſted, all the interior ſurface of the pericardium, and the external of the heart, auricles, and large veſſels, appear'd of a pale colour: being all cover'd over with a kind of matter which was of a white colour, inclining to cineritious, and reſembling nothing more than lime, juſt laid upon a wall in the form of a plaiſter; ſo that it immediately brought to my mind Guarinoni, who, as I have already told you (*r*), found in this kind of inflammatory diſorders of the lungs, and pleura, the heart "co-"ver'd over, as it were, with lime;" that is with polypous concretions (as I there explain'd it, and here again ſaw it) reſembling a thick, but lax membrane, which was very eaſily taken off, and very eaſily torn aſunder.

And when theſe ſordes were remov'd, all the parts that they had cover'd came into view, and were of their natural colour, and conſtitution; except that the pericardium was thicken'd, and reddiſh: that is, not affected with an inflammation indeed, but with a kind of phlogoſis nevertheleſs.

The heart ſeem'd to be larger than natural; and contain'd black blood, on both ſides, ſuch as was met with in ſeveral parts of this body: and in the right ventricle, and its annex'd auricle, were round polypous concretions, likewiſe, contain'd.

The medullary ſubſtance of the cerebrum, wherever you cut into it, and the ſurface of the lateral ventricles alſo, ſhow'd ſmall veſſels turgid with blood: and in the ſame ventricles was a ſerum of a colour inclining to a dirty yellow.

In the belly I had obſerv'd theſe things. The ſpleen was large; the liver very large; ſo that filling up the left hypochondrium alſo, as well as the right, it preſs'd down the ſtomach: a portion, therefore, of the gula, terminating in the ſtomach, appear'd at two fingers breadths below the diaphragm. But beſides this magnitude no diſeaſe was perceiv'd in theſe viſcera.

In the trunk of the inferior vena cava, was an oblong and thick polypous concretion.

At length, in regard to the genitals, the uterus was ſomewhat nearer to the left ſide, than to the right; and fell forwards. The ovaries were very long, but very ſlender, white and hard; and were join'd to the uterus by ligaments that were conſiderably more thick than uſual. The veſſels which run through the broad ligaments of the uterus, were very turgid with black blood; and here and there varicous.

(*r*) Epiſt. 20. n. 37.

When I had carried on the diſſection from the upper part of the uterus, to the lower orifice of the vagina, I ſaw the cavity of the uterine fundus, and the continued cervix, full of mucus; which was almoſt tranſparent like a jelly, ting'd with no colour, and thinner than that which is wont to be at the orifice of the uterus, and was not wanting here.

When the upper mucus was taken away, a very ſmall excreſcence, almoſt of the circumference of a circle, and of a red colour inclining to brown, was ſeen to be ſlightly prominent from the internal ſurface of the fundus.

And when the inferior and thicker mucus was taken away, the loweſt part of the cervix appear'd to be unequal with a kind of unuſual, ſhort, and red lines, lying in a longitudinal direction, and being ſomewhat prominent.

The vagina; although it was not without rugæ, from the middle of it downwards; was, in proportion to the ſtature of the woman, who I have ſaid had been of a middle ſize, longer and wider than is natural; and contain'd, in its cavity, a wooden ring (the proof of a prolapſus) ſituated in ſuch a manner as I never remember to have ſeen it before.

For as it was of an elyptical form, it had its longer axis plac'd according to the longitudinal direction of the vagina; and the ſhorter axis, which however was ſo long as to diſtend both ſides of the vagina conſiderably, plac'd according to the breadth of that cavity.

Both of thoſe ſides therefore, in that part where they were preſs'd by the ring, ſhot forth into an excreſcence, of the ſhape and ſize of a large decorticated almond; of a cartilaginous hardneſs, and white, except that one of them was livid in the middle; ſo that an approaching change, from a ſcirrhous nature, into that of a cancer, ſeem'd to have been at hand.

17. Thus far then of the uterus "when prolaps'd outwardly; now, as I have promis'd you (*s*), of the uterus "when retracted inwardly."

But I do not ſuppoſe that you expect, in this great light of anatomy, that I ſhould relapſe into the old exploded, and long rejected error; and believe, in concert with old women, that the uterus ſometimes aſcends to the ſeptum tranſverſum, and even, by permiſſion of the almighty God, to the fauces themſelves. Whether ſome of the ancients, following Galen (*t*); who was a ſtranger to this kind of errors; following him, I ſay, more in words than in reality, have aſcrib'd a power of aſcenſion to the uterus; or others deceiv'd, like Fernelius (*u*), by flatus diſtending ſome lax part of the convuls'd inteſtine, into the form of a globe, have affirm'd that they have, with their own hands, actually found the uterus to be carried up into the ſtomach; we however underſtand by the words of Hippocrates, which we ſtill retain, *uterorum introcedentium*, "of the uterus being retracted inwards," not the uterus aſcending upwards, but only an irritation from the uterus; under which name I here comprehend the tubes alſo, and the ovaries; aſcending by means of nerves, and membranes, to the ſuperior parts.

And although by the term of *hyſterical affection*, we believe that this diſorder only, which I have juſt now mention'd, can with propriety be intended; yet I am not ſo obſtinately refractory to the common cuſtom, as to be willing to diſpute with thoſe, who compriſe under this ſame appellation, the various, and

(*s*) N. 1.
(*t*) De loc. aff. l. 6. c. 5.
(*u*) Pathолog. l. 6. c. 6.

multi-

multiform diſorders of women, which often ariſe from other cauſes: as I likewiſe ſhall not diſpute with thoſe perſons, who chooſe rather to call theſe diſorders hypochondriacal; although, very frequently, the hypochondria are no more in fault in patients of either ſex, that they call hypochondriacal, than the uterus is in theſe women whom others call hyſterical.

If there be any thing common to both, the chief diſorder is in the nervous ſyſtem as it is call'd: and I think the celebrated Flemyng (*x*) has acted with great propriety, in comprifing the diſorders of one, and of the other, ſpecies, under one general title of *Neuropathia*.

We are not ſurpriz'd therefore, when attacks of this kind ariſe ſuddenly; not from the uterus, nor from the hypochondria; but from terror, or indignation: or even from ſome peculiar odour. Thus likewiſe we underſtand, how we have frequently, and happily prevented, or overcome, theſe attacks, by the opportune giving of opium.

For, although the origin of theſe attacks, or paroxyſms, might ſeem to be from the lower belly; and even from the hypochondria themſelves, and the uterus; yet the propagation of the noxious motion was, without doubt, made by the nerves and the membranes.

You have already had an example, from me, of a recurrent epilepſy being prevented in its paroxyſms, by the uſe of opium (*y*). I will now tell you, in a brief manner, how I prevented, by means of the ſame remedy, theſe hyſterical paroxyſms, as they are call'd, in two women.

18. There was a matron of a genteel family, who was afflicted with want, and the abſence of her huſband; to whom ſhe had born many children in her more flouriſhing time of life.

This woman was ſeiz'd with an intermitting fever; the beginning of which became more and more troubleſome every day, by reaſon of the cold increaſing. And behold, during this cold fit, ſhe was ſeiz'd with ſo great a difficulty of breathing, that ſhe could not perform this function, without her neck being erect; nor without a ſtertor, and ſuch a conſtriction of the cheſt, that, toſſing and writhing herſelf about, in the utmoſt anguiſh, ſhe cried out ſhe was juſt going to die.

The patient herſelf, and thoſe who were about her, then believ'd, that the cold ſhe felt, as well as the other ſymptoms, were to be charg'd to the account of the beginning fever.

But as the ſame ſymptoms, and indeed more violent ones, often recurr'd at other times, and were even attended with very frequent, and ſpeedy concuſſions of the whole body; and moreover with ſuch a conſtriction at the throat, that, though ſhe felt excruciating anguiſh, ſhe could not cry out; it appear'd clearly to every one of what nature the complaint was.

It coſt me a great deal of time, and a great deal of difficulty, to cure theſe hyſterical paroxyſms, firſt; and after that the febrile paroxyſms.

About a year after this, as I remember, when other intermitting fevers, and, after ſome days, thoſe very violent attacks began to return again; but at the ſame hour every day; I reſolv'd to prevent them from returning if poſſible. Wherefore, one hour, or ſomewhat leſs, before the fit was to come on, I gave her half a grain of purified opium.

(*x*) In Neuropathia. (*y*) Epiſt. 9. n. 7.

She

She had no attack on that day, none on the two followings days, on which the ſame remedy was repeated. On the fourth day however; to be faithful and conceal nothing; the diſeaſe was more powerful than the remedy: perhaps becauſe nature was accuſtom'd to it. But as this attack was much ſhorter than the former, and did not return any more; nor the ſtrength of the patient was ſo much diminiſh'd as it had been; I got rid of the fever much ſooner, and more eaſily, than in the preceding year.

19. What led me to ſay that perhaps nature was accuſtom'd to this remedy, another example will ſhow. A virgin, of a ſlender habit, labouring under an obſtinate hardneſs of the liver, and ſuch a number of different, and long-continued, ſymptoms of diſeaſe, that nobody could have believ'd ſhe would live to be of woman's eſtate; and much leſs that ſhe would arrive to a decrepid old age; for ſome little time ago ſhe was ſtill living; was viſited almoſt every day by me, nearly about the ſame time that I attended the matron I have been ſpeaking of: which was when I was a very young man, and practis'd phyſic in the place of my nativity.

For to the other diſorders, among which I remember that there were much more ſevere pains of the head, and a greater irregularity in the uterine diſcharges, than in the matron, a fever was added; which return'd every day at evening, with a coldneſs. With this coldneſs, a ſenſe of compreſſion, and ſtreightneſs, at the cheſt, and a difficulty of reſpiration, began to attack the patient.

And this was ſo much increas'd within a very few days, as to oblige the patient to ſit down, diſtort herſelf, and throw her arms about, and complain in a miſerable manner, when ſhe could; for ſometimes it was not in her power to complain.

All remedies were in vain; firſt to prevent the increaſe of the attack, and ſecondly, to prevent its return; till I had recourſe to purified opium, by means of which I every day prevented the paroxyſm: and, after ſome days, found that it did not recur, although the opium was omitted.

On the four-and-twentieth day after this, when the attack had return'd again, and I had endeavour'd to overcome it by the ſame method, but not with the ſame ſucceſs; it came into my mind not to change the remedy, but the form of it.

For this reaſon therefore, having given; at the ſame diſtance of time from that in which the fit was expected; as many drops of Sydenham's liquid laudanum, as anſwer'd to the half-grain of the former ſolid laudanum, I ſo far obtain'd my wiſhes, that I had no more to combat with this paroxyſm afterwards as before; but only with the other diſorders.

But it was leſs ſurprizing that, in this virgin, opium ſhould have put to flight paroxyſms which were evidently convulſive, than that, in another hyſterical virgin, ſpoken of by Riverius (z), it ſhould have overcome the ſame paroxyſms, join'd with a very oppreſſive ſoporific diſorder; and even then in another where the paroxyſm made its attacks not only with a ſoporific diſorder, but alſo with a ſhort continued paralyſis of the limbs. For theſe diſorders were remov'd by my friend Guliermi, an ingenious phyſician, at

(z) Cent. 2. obſ. 26.

Feltri,

Feltri, in the ſame manner as the others were by Riverius when remedies of a different nature had been of no effect.

However, in the patient of Riverius convulſive ſymptoms were not wanting; and in the laſt there was a periodical coldneſs of the whole body. Which one very ſymptom, that experienc'd man Berryat *(a)* did not heſitate to conſider as a convulſive ſymptom, in thoſe intermittent fevers; and to look upon it as the cauſe of theſe different ſymptoms, that follow'd in different caſes: ſo that if he could prevent that, he would alſo prevent theſe: and this he aſſerted he had obtain'd, by giving a medicine with opium in it, one hour before the beginning of the cold fit.

And you will perceive, that the four cures of women I have ſpoken of, which were brought about in the ſame manner, even before he wrote, agree with his opinion; if you attend to this, that the violent ſymptoms, in each of them, generally recur'd at a certain hour of the day; either with the cold that preceded the fever, or continued to return every day inſtead of the fever, as in the laſt.

20. What has ſucceeded, with me, in preventing hyſterical affections, I have already ſhown you. But, on the other hand, by what theſe paroxyſms have been ſometimes brought on, according to the obſervation of Hippolyto Franceſco Albertini, and John Jerom Zanichelli, as I have heard it from them, I will not conceal from you.

The firſt related, that, from the infuſion of Sena, he had ſeen hyſterical convulſions ariſe, more than once: and this you will readily believe might happen, from the vellication of the inteſtines, and the tormina that were excited in conſequence thereof.

The other affirm'd, that he had certainly known Balſam de Copaibe excite violent uterine diſorders; which, unleſs you refer this effect to the ſmell, that is not very acute, nor very ſweet, it will be leſs eaſy for you to conceive of.

Here perhaps you will interrupt me, by inquiring whether this has likewiſe been obſerv'd in hypochondriacal men? And if not, why then do moſt perſons at this time contend that the hyſteric and hypochondriac diſorders are one and the ſame diſeaſe?

But ſoftly, I beg of you. For the ſame things are not always found to be uſeful or injurious even in hyſterical patients: nor do the ſame ſymptoms occur in all; any more than they do in hypocondriacal men.

For which reaſon it ſhould have been leſs inſiſted upon; by ſome in other reſpects very learned men, who contend for the oppoſite opinion; that there are ſo many differences betwixt the two diſeaſes; as if all theſe circumſtances, that they take notice of, were always obſerv'd in hyſterical women, and moſt of them never in hypochondriacal men; or as if thoſe things which happen much more frequently, and violently, in women, than in men, either were not of the ſame kind, and different only in degree; or, to thoſe who compare the nervous ſyſtem of women, their bodies, and method of living, with thoſe of men, it did not plainly appear, why the ſame cauſes ſhould act much more eaſily, frequently, and ſharply, upon the nerves of the former, than on thoſe of the latter.

(*a*) Mem. preſentés à l'Acad. R. des Sc. tom. 2.

Nor have I hinted at theſe things, becauſe I have a mind to enter into an altercation with any perſon; but rather to prevent others from entering into diſputes among themſelves.

And indeed if you read over again what I have written above *(b)*; you will clearly ſee what ſide in this controverſy I ſtand upon: and although I very well know, that, in all women who are call'd hyſterical, the uterus, its tubes, or teſtes, do not betray any diſorder to the inquiring anatomiſt; yet you will ſee that thoſe women, in whom the irritations begin from theſe parts, are by us properly call'd hyſterical.

Wherefore, if you ſhould ſay that there was ſomething hyſterical, in that widow whom I deſcrib'd in the thirty-fifth letter *(c)*, who had been without her menſes for eight months already, was not without a ſenſe of ſomething aſcending to the throat, and had a purulent puſtule in the upper paries of the uterus, and a matter, within the tubes, of a fleſhy colour inclining to yellow; in this caſe, though perhaps I might, I ſhall not conteſt it with you.

And I will even add to this, two hiſtories of women, who, as they themſelves and others ſuppos'd it, I will alſo, agree were hyſterical; if you will firſt give me leave to take notice of as many, that you may add to the Sepulchretum.

One is that of the celebrated Mayerus *(d)*, of a woman whoſe uterus being large; and which is a very extraordinary inſtance, univerſally chang'd into bone, ſo that it was neceſſary to break it aſunder with a hammer, in order to examine its internal ſubſtance; contain'd within its cavity, which was very cloſely ſhut up at the os internum, a milk-like pus: but ſomewhat thicker than milk, not fœtid, yet, in its center, inclining to a green colour.

This woman, from the time that ſhe began to obſerve the tumour of her uterus, was free from the hyſterical paſſion; ſo that you may ſuſpect this paſſion to have ceas'd, becauſe the uterus could no more be irritated.

The other hiſtory is from the celebrated Helwich *(e)*, who found four hollow excreſcences annex'd to the uterus of a woman externally, as if by a ſmall ſtalk or ſtem, of the ſame texture with the uterus itſelf; and a ſacculus prominent from one of the ovaries: which ſacculus, when cut into, diſcharg'd a gelatinous and blackiſh matter, to the quantity of half an ounce, with impetus.

This woman, as the ſame author had declar'd in another place *(f)*, was evidently one of thoſe, who, "it is agreed among all [illegible]icians," are ſubject to affections of the uterus; whether, to uſe the words of Galen *(g)* "any "one chooſes to call them apnœas or ſuffocations, or even a kind of con- "tractions ſhall happen."

For, being ſeparated from her huſband, ſhe had fallen into ſuch a prurigo of the genital parts, as to be but at little diſtance from a furor uterinus: ſo as to render it not at all ſurprizing, that horrible ſpaſms ſhould be brought on; by which the fauces were ſhut up, and ſuch a difficulty of breathing occa-

(b) N. 17.
(c) N. 16.
(d) Commerc. Litter. a. 1731. ſpec. 30. poſt. n. 4.
(e) Eph. n. c. cent. 3. & 4 obſ. 142.
(f) Earund. cent. 1. & 2. obſ. 148.
(g) De loc. aff. l. 6. c. 5.

ſion'd, that there was frequently great danger of a ſuffocation; by which ſhe was, at length, ſuddenly carried off; but that the polypi found in the heart of this woman, were rather the effects than the cauſes of this ſuffocation, you will naturally believe, if you aſſent to what I have written to you on this ſubject, on a former occaſion (*b*). But now let us go on to the two obſervations that I promis'd you juſt now.

21. A young woman who was a public ſtrumpet, of a fat habit of body, and much given to drinking, having formerly born children; began, after having been without her menſtrual evacuations for four months, to be ſubject to hyſterical affections: and after that labour'd even under a mania, and at length died of univerſal convulſions in this hoſpital, where I diſſected her body, about the end of February, in the year 1717.

The belly contain'd a liver of ſuch a colour as a liver is when boil'd: yet the bile, which had exſuded from the gall-bladder, had ting'd the inteſtines that lay near it with a very lively ſaffron-colour.

The teſtes were white, hard, ſcirrhous, enlarg'd beyond the natural ſize, and drawn behind the uterus, by their own weight as it were. The internal ſurface of the uterine fundus ſeem'd to be ſmear'd over with a kind of bloody mucus, juſt as if the menſtrua were about to flow, or had very lately flow'd: beſides, on that very ſurface, a few ſmalliſh tubercles, like warts, were prominent.

The urethra, which was perforated with frequent orifices of its canaliculi, being open'd, gave out from ſome of theſe orifices, upon gentle preſſure, a white and viſcid matter; which, if every thing had not been found in this part, might have ſeem'd to be pus, and given us a ſuſpicion of a virulent gonorrhœa.

The thorax I did not open, as I was taken up with many obſervations, which it is not neceſſary to mention here.

The cranium had been ſaw'd open; but the brain was diſſected by ſome perſons who did not think I intended to do it myſelf; and that when I was abſent: which very much diſappointed me, as, upon the ſcore of the mania, and the convulſions, I ſhould have inquir'd diligently into the ſtate of this part.

It was, however, related to me, that nothing worthy of remark appear'd, beſides polypous concretions in the ſanguiferous veſſels; which I myſelf alſo ſaw, in thoſe that happen'd to remain.

22. That the liver has been obſerv'd to be like one that is boil'd in dropſical perſons, you have in this third book of the Sepulchretum, ſection the nineteenth (*i*); and, in like manner, in the additamenta to the twenty-third ſection (*k*): but in cachectical patients only in the twentieth (*l*).

To theſe add thoſe in whom a cachexy would very ſoon have appear'd; to which claſs I think may be refer'd the ſtonecutter, and the porter: the former of whom I have taken notice of formerly from Jacobus Sylvius, and the latter, as being diſſected by me, in the thirty-ſixth letter (*m*), and in the

(*b*) Epiſt. 24.
(*i*) Obſ. 3. §. 12. obſ. 4. §. 21.
(*k*) Obſ. 86.
(*l*) Obſ. 2. §. 1.
(*m*) N. 27.

third (*n*). And what this ſtrumpet was threaten'd with, was clearly perceiv'd by the ſuppreſſion of her menſes.

But not to digreſs far from my purpoſe; to this related thoſe verrucæ as it were of the uterus, and that ſtate of the teſtes, which ſhow'd diſorders of theſe parts to have preceded, as you may of yourſelf conjecture. In the next woman, however, the diſeaſes of the ſame parts were more manifeſt.

23. There was a woman, at Venice, of forty years of age, of the lower ſort, of ill fame; given to wine, of a proper ſtature, healthy, and of a fat habit of body.

This woman was ſubject to fear, even from a ſlight cauſe, from which ſhe trembled, and almoſt ſwoon'd away. She vomited often, ſo as to retain nothing of ſolid food; and could not taſte of fiſh by any means. When we inquir'd, of her acquaintance, in regard to the reſt of her diſorders in particular, they conſtantly anſwer'd that ſhe had never complain'd of her head, nor heart; as for inſtance, of any violent pulſation, palpitation, or any other diſorder thereof; nor had ever, that they knew of, been attack'd with inflammations of the thorax: and why I remark theſe diſorders not to have preceded, you will eaſily underſtand, by reading over the account of the diſſection.

The only diſeaſe of which ſhe complain'd, they ſaid was affections of the uterus, which ſhe aſſerted to be mov'd, here and there, through her belly, at that time, and ſometimes to aſcend to her fauces, with a ſenſe of ſuffocation; from which ſenſe however, ſhe was ſoon freed.

On the very firſt day of January in the year 1709, ſhe complain'd about evening that her ribs had fallen in as it were; and order'd an old woman to be ſent for, who as the opinion of the common people was, knew how to raiſe them up again.

Early one morning, when ſhe ſaid that ſhe was ſeiz'd with a very violent hyſterical affection, and that the uterus, moving about here and there, had already aſcended to her fauces, ſo that ſhe was ſuffocated thereby; ſhe died within an hour, or at moſt within two: having no foam at her mouth, nor being agitated with any convulſive motions, that any of the by-ſtanders could perceive.

As it was the buſineſs of Santorini to diſſect the body, and he, for certain reaſons, tho' he would have choſen it, could not defer it; he beg'd of me alone; who always avoided diſſecting bodies of this kind, till they had lain for a proper length of time; and even preſs'd me over and over again, by the friendſhip I had for him, that I would be preſent at the diſſection with him; and beg'd of me with this intent, that we might give the more time to the inquiry, whether the woman was really dead, than to determine the ſeat of the diſorder from whence ſhe died.

The former of theſe inquiries we made with the greater diligence, as we found the eyes not very turbid, and the body ſcarcely at all rigid; and, at the tenth hour after death, the thorax even ſtill warm at that time of year.

Wherefore, bearing in mind thoſe things that Galen (*o*) had taken notice of from Heraclides Ponticus, and other ancient phyſicians; we omitted nothing

(*n*) N. 4. & 5. (*o*) C. 5. ſupra ad n. 20. cit.

which us'd to be done at that time, or ſince, in inquiries of this kind: that is to ſay, a little lock of comb'd wool, the flame of a thin wax candle, and a poliſh'd glaſs applied to the mouth and noſtrils: to place a cup full of water on the ſcrobiculus cordis as it is call'd, and to more than one part of the thorax, as if we had divin'd the admonitions of Winſlow (*p*): to apply the fingers, and the hand, not only to the region of the heart, but alſo to the carotid arteries in the neck, and to the iliacs where they deſcend on the anterior part of the oſſa pubis to the thighs; the former of which was afterwards confirm'd by the illuſtrious Senac (*q*), and the latter had been formerly hinted at by Riolanus (*r*); and to apply them repeatedly and attentively, if it were poſſible to perceive any pulſe: at length, by blowing powders high up into the noſtrils, ſuch I mean as had a tendency to excite ſneezing, upon which Hollerius (*s*) greatly depended in inquiries of this kind.

Not content with all theſe experiments, and others of the like kind, having perceiv'd, upon making a ſlight inciſion into the ſkin of one thigh, a little blood to come forth, tho' ſlowly, and continue to flow; we open'd the vein of the cubit with a lancet, in the ſame manner, as if blood were to be taken away.

And then indeed, a very little blood was diſcharg'd: but ſerum ſeparated from the red part was diſcharg'd alſo; ſo that we perceiv'd by this, that a diſſolution of the parts of the blood was made in that vein at leaſt.

At this time, however, we were willing to make uſe of other experiments likewiſe; which, if the woman ſhould have happen'd to be oppreſs'd with any kind of pernicious ſleep, might act by way of a very powerful ſtimulus, to awake her.

For we gradually fix'd the point of a very ſharp inſtrument under the nails, after the manner of Fortunatus Fidelis (*t*): but, in particular, we applied a hot iron to the ſoles of the feet; as Miſtichelli (*u*) us'd to do, in order to rouſe apoplectic patients.

But all theſe things being in vain, and that heat which we had perceiv'd about the thorax in the beginning having vaniſh'd; we determin'd to put an end to our inquiries, as being quite ſufficient: nevertheleſs we cut into the ſkin, firſt, leiſurely and by degrees; always waiting ſome conſiderable ſpace of time, betwixt one and another ſhort and ſimple inciſion; after that the adipoſe membrane, which was very thick, and finally the muſcles themſelves.

While we were making all theſe different trials that I have related, we had leiſure to obſerve that the limbs were not lean, nor yet the head; but that they by no means correſponded to the very fat abdomen and thorax: we obſerv'd beſides, that the poſterior ſurface of the body, on which ſhe had lain at the time of her death, was of a red colour inclining to livid; but that the anterior part, neither in the head, nor at the neck, nor in any other place, if you except the upper parts of the thigh, had any redneſs or livor.

Now I will relate to you what we found in the belly firſt, and after that in

(*p*) Mem. de l'Acad. R des Sc. a. 1738.
(*q*) Traité du Coeur l. 3. ch. 7. n. 5.
(*r*) Encheirid. l. 5. c. 46. verſ. finem.
(*s*) De morb. intern. l. 1. c. 59.
(*t*) De Relat. Medic. l. 4. c. 1.
(*u*) Apud Lanciſ. de Subit Mort. l. 2. c. 5. n. 12. quod poſtea Miſtichellius ipſe confirmavit Tratt. dell' Apopleſſ. l. 2. ſ. 1. c. 6. & ſ. 3. c. 3. caſ. 8. & ſeq.

the thorax; for the head (and perhaps this was not neceſſary) we had it not in our power to diſſect: but I will communicate the appearances, to you, in ſuch order, as to begin with the thorax.

When we had remov'd the integuments of this part, and the muſcles, from the bones, and cartilages, that lay beneath, a great diſorder appear'd in the latter; which the very large breaſts, and the fat, that lay upon them, ſo far hid before diſſection, that no mark of it appear'd.

That is to ſay, the ſternum being outwardly prominent, at about half-way of its length, rais'd up the adjoining ribs, with it, on both ſides: but the ribs which lay next under theſe, ſubſided very much: and finally, the laſt of the ribs; I mean of thoſe that are join'd with the ſternum either by their own cartilages or the intervention of others; were again prominent, as the natural ſtructure of the cheſt requires: wherefore, at each ſide of the ſternum were large depreſſions of the ribs, which the breaſts, and the fat, made to appear equal and ſmooth on the outſide; as I have already ſaid.

Upon opening the thorax, the left lobe of the lungs was found to adhere to the pleura in one part, though very ſlightly: and the right lobe was found to adhere very cloſely thereto, in almoſt every part, by a kind of membrane which was form'd preternaturally, upon the external coat of the lungs.

Both the lobes, when we cut into them, we found to be hard, and tendinous, as it were, in many places; and abounding with a frothy humour beſides, as if with a kind of ſaliva.

The pericardium contain'd a conſiderable quantity of water, of a brown colour, and inclining to be turbid. And both ſides of the heart contain'd a black fluid blood, ſuch as was found almoſt every where in this body: the right ventricle, moreover, contain'd a ſmall polypous concretion, of a white colour, but ſoft; a ſimilar one to which was found in the pulmonary artery, with a great quantity of blood.

With this fluid the right auricle was very turgid; but the left was contracted. However, the ventricle annex'd to this auricle, being larger than its natural ſize, offer'd to us more than one circumſtance worthy of obſervation.

For, to omit that the tendinous fibrillæ, which paſs betwixt the valvulæ mitrales, and the columnæ, ſeem'd to be in greater number than uſual; theſe columns were certainly thicker than they naturally are, and more hard: ſo that they ſeem'd to be much more of a tendinous than of a fleſhy nature; whether you conſider'd the colour, which was white, or attended to the reſiſtance they gave to the knife, in inciſion.

Beſides, in the parietes of the ſame ventricle, ſome places occur'd, here and there, in which the fleſhy ſubſtance of the heart was either white, or of a red colour inclining to whiteneſs; ſo as at firſt to impoſe upon us under the appearance, as it were, of glands: but it ſhow'd itſelf to be ſimilar to the columnæ, by that ſame peculiar reſiſtance when cut into.

This diſeaſe, of the fleſhy fibres of the heart degenerating into a tendinous nature, became the more evident, the more it went from the internal ſurface of the ventricle, to the external ſurface, and it alſo reach'd, externally, to that place with which the ſeptum cordis correſponds.

And indeed the fat itſelf which lay upon this viſcus, was not quite in a na-

tural ſtate. For on the poſterior ſurface of the heart, it was unequal, for two ſmall tracts, in a longitudinal direction; and in the ſame place was of a brown colour inclining to red.

The large artery, from the heart almoſt quite to the whole of the curvature, was very evidently dilated, though not in any great degree; and near to the ſeptum tranſverſum it ſeem'd to be narrower than it naturally is.

Having laid it open; and diſcharg'd the blood, which it contain'd in ſome conſiderable quantity; it ſhow'd, on the whole of its internal ſurface, from the heart at leaſt to the emulgent branches, ſome whitiſh particles, and ſome lines that were a little protuberant: beſides, not only in that tract which I juſt now ſpoke of, but in other parts alſo, as I found from diſſecting ſome of its ſuperior branches, the internal coat of this veſſel was ſo eaſily to be disjoin'd from the next, that large pieces of it follow'd the ſlighteſt friction of the ſcalpel.

In the belly were the following appearances. The omentum was drawn up towards the ſpleen. The ſituations of the inteſtines were diſturb'd. And theſe viſcera, but particularly the colon and the rectum, were much diſtended with air. The meſentery indeed, the ſtomach, the ſpleen, and the liver, the bladder annex'd to which was full of bile, were ſound.

But the pancreas, which, like ſome of the ſmall inteſtines, was of a red colour; eſpecially in its more deſcending part; had its glandular bodies firmer than they generally are, and more diſtinct from one another.

Finally, in examining the uterus, the tubes, and a conſiderable part of the vagina, with accuracy; not only at that time, but on the day following, when they were taken out of the body, in order to give us more time, and day-light; we obſerv'd theſe things.

To the poſterior part of the fundus uteri, externally, about the middle, was hanging, by a ſhort peduncle, a globular body, reſembling nothing more in whiteneſs, form, and magnitude, than a ſmall unripe cherry: in cutting of which, we found it made up of a fibrous, but callous ſubſtance; the orders of the fibres being confus'd: another globe of this kind was buried within the very thickneſs of the parietes uteri.

The fundus uteri being open'd ſoon after, it appear'd to be ſmear'd over with a great quantity of mucus which was ſomewhat bloody: which being wip'd off, and I having ſhown, by preſſing my fingers underneath, that bloody drops came out every where from the fundus, but not from the cervix, and ſtill leſs from the vagina, with a very gentle preſſure; it did not ſo much diſpleaſe Santorini, that we could not learn, for a certainty, whether the woman had menſtruated lately, as that he had before ſuppos'd (*x*) the ſource of this diſcharge to be in the vagina, rather than in the uterus.

The upper part of the cervix excepted, the remainder was ting'd with a far different redneſs; that is to ſay, as if from inflammation, which on one ſide inclin'd more to a brown, and yet did not any where pervade the ſubſtance of the cervix to any depth.

In the tubes alſo was a mucous humour, but white. Both of theſe canals

(*x*) Opuſc. Medic. 4. n. 3.

were

were pervious into the uterus, for air blown in by the larger orifice: nor were hydatids wanting near to that orifice.

Both of the teſtes were tumid from included cells: but one of them more than the other; as beſides one large cell, it alſo contain'd many ſmaller ones, all full of ſerum, except one which was fill'd with a white pus.

In the other, together with the cells, and the veſicles, containing ſerum, we ſaw other cells of a black colour internally. And on the ſurface of both we obſerv'd orifices, which admitted a ſlender probe: but particularly in the membranes by which the tubes are connected with the teſtes; they are call'd *Alæ Veſpertileonum*, or bats wings; we ſaw the plexuſſes, and nerves running in an elegant manner.

And as theſe were ſome of the thicker ones which I had ſeen before; ſee, ſaid I, this is the "plexus," and theſe the "nerves," which I have ſpoken of in the Adverſaria (*y*), and promis'd to deſcribe more fully on ſome other occaſion: this deſcription was afterwards given by Santorini (*z*) himſelf, but he muſt have totally forgotten this paſſage of mine in the Adverſaria, when he ſaid, that this plexus was either not clearly "known, or indeed not hi-"therto obſerv'd."

24. I am not willing to add long annotations to a long hiſtory. Let it be ſufficient to ſubjoin a few things, and theſe in a brief manner.

In regard to the ſternum, therefore, being prominent in a certain place, and the ribs, together with their cartilages, being depreſs'd inwards to ſuch a degree, on both ſides, where they ſuſtain'd large breaſts, and a thick fat; a paſſage of Riolanus (*a*) is extant, which refers to the ſame thing: "in wo-"men that have large breaſts, and are fat, I found, upon removing the bulk "of the breaſt, the ſternum accuminated, and the cheſt narrow; which "in them was the cauſe of a dyſpnœa: this narrowneſs had been caus'd "by the weight of the breaſts."

This laſt circumſtance is a doubt with me. For unleſs women lie, the greater part of their time, in a ſupine poſture; which is not ſo convenient to thoſe who are fat, and have large breaſts; the weight of the breaſts rather draws the ribs outwards, than forces them inwards.

Neither can you impute it to the hard, and tight ſtays, which women wear; for how can they hurt the ribs, without hurting the breaſts? Wherefore, I ſhould rather chooſe to account for this vitiated ſtructure, from the original formation: for it does not appear in thoſe who are fat, and have full breaſts, but by diſſection, wherein it ſtrikes the eye, and the attention, of the anatomiſt, much more than in lean perſons, (in whom if it be at all, it is obvious before diſſection) as it is an appearance which he does not expect.

But be this from what cauſe it will, there is no doubt, but, by ſtreightening a part of the lungs, it may render the circulation of the blood through them, ſo much the leſs eaſy, and reſpiration leſs free; eſpecially where from convulſion, or any other cauſe, either of theſe offices is made more difficult.

And although it is very difficult in very fat and full-breaſted women of that kind, to diſtinguiſh this diſorder; unleſs, perhaps, by preſſing your fingers,

(*y*) I. n. 14 in fine.
(*z*) Obſ. Anat. c. 11. §. 17.
(*a*) Encheirid. Anatom. l. 6. c. 14.

very

very ſtrongly, againſt the cheſt, at the ſides of the breaſts; yet if they are affected with a much more difficult reſpiration, than others of the ſame make, without any apparent cauſe; you may then ſuſpect whether ſuch a diſeas'd ſtructure is not the cauſe, in conſequence of my obſervation, and thoſe of Riolanus.

And to theſe you may readily add an example, taken from the Commercium Litterarium (*b*), of a noble woman afflicted with an aſthma; among the cauſes of which, you will ſee that a male conformation of the cheſt is, with juſtice, recounted: for "the ribs, of the left ſide, being curv'd like the "Greek letter ſigma," made the cavity of the thorax narrow in a ſurprizing manner; and depreſs'd the heart, which was longer than the heart of an ox, into the right ſide.

But as this woman "was very fat, and fleſhy," it is moſt probable that this diſorder, of the ribs, had lain hid under a great quantity of fat.

25. But, in regard to that ſenſation of the ribs falling down, as it were, to raiſe up which the old women often ſend for their ſhe-phyſicians, eſpecially in ſome particular cities; as I remember formerly to have ſeen in mine; I confeſs I have nothing certain to ſay upon the ſubject.

Yet I nevertheleſs ſuſpect, that ſome injuries, and uneaſineſſes, of that kind which the cartilago xiphoides is wont to occaſion, when verging inwards, are confounded with this ſenſe: of which injuries, after Codronchius (*c*), and Septalius (*d*), you may ſee what is transfer'd into the Sepulchretum from Diemerbroeck (*e*), from Barbette (*f*), and Bonetus himſelf (*g*): although that even the cartilages of ſome of the ſpurious ribs, may now and then be depreſs'd, and bring on conſiderable inconveniences, which are, nevertheleſs, immediately remov'd by reſtoring them to their former ſeat, and that by the hands of an old woman, you will learn from the ſame Sepulchretum (*h*).

But whether theſe cartilages belong'd to thoſe "two laſt" ribs, or to the "laſt of all;" and not rather to ſome one of them, that are next above the two laſt, the well-known ſhortneſs of thoſe lower cartilages makes me doubt: and ſtill more, when I read that the "lower of them lay upon the "upper."

However, in the woman in queſtion, whether the ſenſe, whereof we ſpeak, belong'd to ſome cauſe of this kind; or to another which I have explain'd to you in the caſe of a woman formerly ſpoken of (*i*); it is better to leave quite undetermin'd, than to make any unadvis'd concluſion in this place.

26. But as to what relates to the fleſhy ſubſtance, of the heart, degenerating into a tendinous nature, you will, in the firſt place, conceive from thence, that it was not without propriety I formerly (*k*) ſuppos'd this might happen; I mean when I was upon the ſubject of explaining, in what manner this ſubſtance is ſometimes chang'd into that of bone.

(*b*) A. 1733. hebd. 37. n. 2.
(*c*) De Prolapſu Mucron. Cartilag.
(*d*) De Morbis ex Mucron. Cartilag.
(*e*) Sepulchr. l. 2. ſ. 1. in additam. obſ. 11.
(*f*) Ibid. l. 3. ſ. 7. in Schol. ad obſ. 19.
(*g*) In eod. Schol.
(*h*) L. 2. ſ. 1. in Schol. ad obſ. 116.
(*i*) Epiſt. 26. n. 25.
(*k*) Epiſt. 27. n. 17.

And

And that the force of the heart decreaſes ſo much the more, in proportion as the greater number of its parts become tendinous, inſtead of being fleſhy; it is natural to gather even from thoſe things, which are ſaid in the ſame place (*l*).

Moreover, this force had decreas'd, in that ventricle which has need of the greateſt force, that is in the left; which, like the neareſt part of the great arterial trunk, had another diſorder of dilatation.

Yet the woman had not complain'd of any violent pulſation of the heart; for Albertini (*m*), even in aneuriſmatic diſorders, found the pulſation, "either quite inconſiderable, or much leſs than uſual, where the ſubſtance of "the heart had become, quite from its baſis to more than one half its extent, "either tendinous, as it were, in its conſiſtence and colour, or too flaccid in its "nature;" for there is no doubt, but the natural force of the heart muſt be debilitated, from either of theſe ſtates.

However, in regard to all theſe diſorders, and others, which I have deſcrib'd in the great artery, and the ſubſtance of the lungs being become tendinous, as it were, in many places, and the coarctation of theſe viſcera, and of the heart, by the depreſſion of the ribs; in regard to all theſe diſorders, I ſay, you very clearly ſee, that they might produce a fatal interception, both of reſpiration, and of the blood's circulation; where a more violent convulſion, than uſual, of the nerves that go to theſe parts has come on.

27. That this convulſion had; as well as other more ſlight diſorders, to which the woman had been ſubject; its origin from the uterus, and teſtes; the preternatural appearances which we ſaw both in the former, and the latter, and the ſenſe of the uterus aſcending, as it were, which began from thence, ſeem to argue.

For, although we did not find the uterus to have proceeded upwards, from its natural ſituation; which indeed cannot happen; yet we ſaw the inteſtines, which might be taken for the uterus, not only diſtended with flatus, but alſo remov'd from their natural ſituations. And to theſe parts a convulſion is eaſily propagated, by the nerves communicating with thoſe, that, being ſubſervient to the functions of the tubes, and the teſtes, were ſeen by us in the alæ veſpertilionum in a thick ſtate; inaſmuch as they are frequently diſturb'd by irritations ariſing from the teſtes.

Here you will perhaps ſay: but much more conſiderable diſeaſes, both of the uterus, and teſtes, are frequently found in other women; who had not, nevertheleſs, been afflicted with violent affections of this kind.

I grant it. Yet there is not in all a matter equally acrid, and irritating; nor are the nerves equally prone to receive an irritation in all, as they were in this woman, who trembled from the ſlighteſt occaſion of fear: nor, finally, are there in all, as in this woman, thoſe diſorders of particular viſcera; ſo that if a violent convulſion make an impetus upon them, they have it not in their power to reſiſt.

For which reaſon, we have the more to fear for thoſe hyſterical, or hypochondriac perſons, in whom we either know, or may with good reaſon

(*l*) N. 18. (*m*) De Bonon. Sc. Inſtit. in opuſc. tom. 1.

ſuſpect,

ſuſpect, that there is either a very great acrimony of the humours, or a taint of the principal viſcera, at the ſame time.

And as ſome phyſicians, otherwiſe not unlearned, did not attend ſufficiently to this; I remember that a young man, who was hypochondriac, and who had been accuſtom'd, for a long time, to haraſs their ears with exceſſive, and continual complaints; though for the moſt part to very little purpoſe; being ſeiz'd with a fever, which they, as uſual, paid but little regard to, and made light of, was overcome by the inſidious diſeaſe, and carried off, before they, I do not ſay foretold, but were ſenſible of the danger.

You therefore, even in querulous perſons of this kind, will preſerve, according to your cuſtom, a cautious, and accurate diligence. For diligence was never injurious, but negligence often is: and to this, if I may ſay the truth, it is to be imputed, for the moſt part, that "any perſon dies, of whom "the phyſician was ſecure *(n)*." Farewell.

(*n*) Celſ. de Medic. l. 2. c. 6.

LETTER the FORTY-SIXTH

Treats of the Impediments to Venery, and of Sterility in both Sexes.

ALTHOUGH that ſection of the Sepulchretum, which immediately ſucceeds, I mean the thirty-fourth, compriſes not only what relates to ſterility, but alſo what relates to ſalacity; yet it is my intention to imitate Bonetus in the former only, for in the latter I have nothing at hand to produce: and indeed I think that ſome things produc'd by him might have been better omitted.

For what does it contribute to ſalacity, that the right ſpermatic vein, and the left, both open'd into the emulgents (*a*)? or at leaſt that there were more than two (*b*)?, Eſpecially as a leſs aptitude to venery is afterwards accounted for, from their number being increas'd (*c*); and the generation of a cold, and watery ſemen, is deduc'd from the influx of theſe veins into the emulgents (*d*).

(*a*) Obſ. 1. §. 1. & 3.
(*b*) Ibid. §. 8.
(*c*) In Schol. ibid.
(*d*) Obſ. 5. §. 3.

So, in like manner, what has the increas'd ſize of the kidnies to do therewith *(e)*? Or the diminiſh'd ſize on the other hand *(f)*?

It is true, I am not ignorant what was formerly ſaid of the office of theſe veins; and what has been contended for, in regard to the kidnies, even by Bartholin himſelf *(g)*. But as the former things have been already ſet aſide, by the knowledge of the blood's circulation; and as what relates to the kidnies is expreſsly call'd "a paradox" by Bonetus *(h)*; they ſhould rather have been hinted at in ſome of the Scholia, than recited among ſolid obſervations.

But I, moreover, think that in regard to ſterility, or fœcundity, ſome things might have been left out with very great propriety. I will give you two inſtances.

A man who had forc'd a virgin, was entirely deſtitute of teſtes, both internally and externally *(i)*; the teſtes therefore do not ſerve for the generation of the ſeed.

Formerly, indeed, there might have been room for theſe things, when that very opinion of Ariſtotle, for inſtance, which is there quoted, was embrac'd even by learned ſectaries: among theſe I do not doubt to place Catullus, whom the ſucceeding poets have with juſtice, call'd "learned," when he writes thus of Atys *(k)*.

Devolvit illa acuta ſibi pondera ſilice.

"He diſencumbers himſelf of theſe weights by means of a ſharp flint."

And now what has this compariſon, of teſticles with weights, to do with the preſent ſubject? Or what has this aſſertion to do, "that none of the "ſpermatic veſſels any where enter the teſtes?"

Or, finally, what affinity is there betwixt a virgin being forc'd, which may be done by an eunuch, and impregnation, of which an eunuch is certainly not capable?

It is alſo worth while to pay attention to this circumſtance, that, in a woman *(l)*, who "died from the exceſſive uſe of venery, the round ligaments, "in the part of them neareſt to the uterus, were found full of ſemen."

There is no doubt but theſe things might have met with approbation formerly; but they cannot meet with it now: no more than thoſe things that are advanc'd in the preceding ſection *(m)*, of the female ſemen being found corrupted in the tubes, or in the uterus, and *vaſa deferentia*.

But give me leave now to omit theſe things, and produce thoſe that are more probable, in regard to the ſterility of both ſexes, and firſt from Valſalva.

2. There was a certain man who was dumb, yet not becauſe he was deficient in his hearing; for he heard very well: the ſame perſon had no hairs, either on his face, or his breaſt, under his arm-pits, or on the ſcrotum; a

(*e*) Obſ. 1. §. 5 & 6.
(*f*) Obſ. 2. §. 1.
(*g*) Vid. Adverſ. Anat. 3. animad. 33. ad fin.
(*h*) Schol. ad obſ. 1. §. 5.
(*i*) Obſ. 1. §. 2. & Schol.
(*k*) Carm. 62. v. 5.
(*l*) Obſ. 6. §. 6.
(*m*) Obſ. 4. §. 11 & 12.

few

few ſcatter'd ones being ſeen on the pubes only, at the very root of the penis. This man was carried off by an accute fever, at the age of five and thirty, his fever being attended with worms.

All the organs of generation being accurately examin'd, they ſhow'd no mark of diſeaſe.

3. Whether this man had a generative faculty, or not, Valſalva has not added; nor yet whether he was without hairs quite from his birth: for the celebrated Heiſter (*n*) ſaw a man, who, without any foregoing diſorder that deſerv'd notice, had loſt all the hairs in his body, and did not recover them within ten years.

Yet it is to be ſuppos'd, that he, of whom Valſalva left this account, was not only naturally without hairs, but incapable of procreation; ſo that both the circumſtances led him to undertake an accurate examination of all the parts of generation.

And as there appear'd to be no diſorder in thoſe parts; this obſervation ſeems to hint, that the cauſe, whatever it is, by which the ſemen is render'd fertile, and the body becomes hairy, muſt exiſt in the inviſible ſtructure of the parts which ſecrete, or perfect, the ſemen.

And we, certainly, ſee both of theſe circumſtances happen together, at the time of puberty, that is when theſe internal ſtructures have now begun to be ſufficiently develop'd.

And indeed, ſome very ſlight appearance, in the cutis of women, has ſometimes been a proof to me of their ſterility; when this was from the birth, and perpetual. For I have ſeen that two women, in whom there was nothing at all that did not promiſe fœcundity, have been married to men of excellent health, and yet been barren.

When I conſider'd every thing very attentively; I found the cutis, in one, contrary to what we ſhould have ſuppos'd, from her kind of life, age, and habit of body, to be by no means ſmooth, and ſoft, if you touch'd it: and in the other I found the ſkin cover'd with a cuticle, which was continually coming off in little ſcales, and ſcurf, even in the face. And I ſaw a third barren woman ſimilar to the laſt when I was copying this letter.

And to me theſe things ſeem'd to admit of being accounted for, from the ſebaceous glands of the ſkin ſecreting a matter, which is either leſs in quantity than it ought to be, or not of the nature requir'd.

But how this matter, when retain'd within the body, or being leſs fit for its office, ſhould prevent conception, is uncertain. At preſent, however, let us come to evident diſorders, in the organs of generation themſelves.

4. Valſalva made obſervations upon two women who were barren; though in the prime of their life; the one from having ſcarcely any veſicles in the ovaries; and the other from the humour of theſe parts being quite concreted; juſt as if they had been boil'd upon the fire. But as I have given you the hiſtory of theſe, already, in other places (*o*), there is no need to repeat them here. I go on therefore to my own.

5. I diſſected moſt of the parts of a man, who died in this hoſpital, about the latter end of November in the year 1717, with a view to anatomical

(*n*) Eph. n. c. cent. 1 & 2. obſ. 197. (*o*) Epiſt. 36. n. 17. & Epiſt. 20. n. 7.

inquiries; when I obſerv'd that ſome parts were in a preternatural ſtate. The ureters were wider than natural in ſome places. And on one ſide, both the veſicula ſeminalis, and that part of the vas deferens, which is next to this veſicle, had ſcirrhous parietes; the membranous ſubſtance being almoſt chang'd into a cartilaginous nature.

6. From this obſervation it appears, how much was wanting for the perfection and ejaculation of the ſemen. For neither that which is wont to be added, by means of Harderus's glands, or carried away by the lymphæducts, could be here added, or carried away; nor could the force, which the contracting coats of the veſicles, and of the lower parts of the vaſa deferentia, previouſly diſtended with ſemen, exert on this fluid, where it is thrown out, be at all expected here.

But on the other ſide, you will ſay, nothing of this kind was wanting. Yet the quantity of inert, and watery ſemen, as it were, which muſt flow from the oppoſite ſide, was of great detriment to that very good ſemen to which it was join'd.

And indeed the hardneſs, and thickneſs, of the ſeminal duct, at its termination on one ſide, may increaſe ſo gradually, as to preſs upon the extremity of the other, and obſtruct it.

And thus it was I remember, that I anſwer'd to Laurence Mariani, a gentleman whom I have ſpoken of before, when in the cloſe of the year 1736, he wrote me the caſe of a noble youth.

This young gentleman having never had knowledge of any woman, his wife only excepted; by whom he had one daughter; had a ſwelling of the left ſpermatic veſſels, attended with pain, together with a ſwelling of the epididymis, and the vas deferens; which was perceiv'd to be hard, together with the epididymis; while the teſticle preſerv'd its uſual ſoftneſs.

By means of ſome remedies, which were applied, the pain was, after ſome months, greatly diminiſh'd; but the tumour and hardneſs not greatly.

Notwithſtanding every thing on the right ſide was, as far as we could judge, in a ſound ſtate; and therefore very proper for the generation, and conveyance of the ſemen; the patient, nevertheleſs, emitted none of this fluid in coitû, to the great ſurprize of the phyſicians.

However, you will have obſervations of a coalition of one of the veſſels, that carries down the ſemen to the veſicle, and in like manner of a calculus concreted in one of the veſicles, to add to the others; of the former caſe from Brunnerus (*p*) and Waltherus (*q*); but of the latter from Valentinus (*r*).

7. And I might here add what I have remark'd, in the diſſection of bodies, of the ſeminal veſicles being dry, and wrinkled, even in a young man; and of the paſſage of the ſemen, into the urethra, being become blind; which Waltherus (*s*) alſo ſaw; if I had not already communicated theſe things to you, when treating of other diſorders, and particularly of the virulent gonorrhœa (*t*). And for the ſame reaſon I omit what relates to calculi

(*p*) De Gland. Duod. ubi de ear. in Hom. Demonſtr.
(*q*) Act. Erud. Lipſ. a. 1725. M. Novembr.
(*r*) Eph. n. c. dec. 2. a. 6. obſ. 68.
(*s*) Loco modo indic.
(*t*) Epiſt. 44. n. 7. & Epiſt. 40. n. 29.

of

of the proſtate gland, that prevent the exit of the ſemen. For this you have already had in the forty-ſecond letter (*u*).

8. I ſhould alſo have written at large, in this place, of the great diſorder of the urethra, which I examin'd in a ruſtic young man, together with my celebrated collegue Valliſneri; if he himſelf had not publiſh'd the caſe three years after (*x*), and the editors of all his works over again (*y*). Wherefore I ſhall only add ſome few things.

As the ſcrotum was not entirely divided into two parts; but only anteriorly; betwixt the upper parts of both theſe diviſions was the orifice of the canal of the urethra: and from thence quite to the apex of the glans, through the whole inferior ſurface of the penis, which was much ſhorter than is repreſented in the figure (*z*), not a canal, but a ſemicanal, was now continued; that is the upper paries of the urethra only and this ſmooth and ſhining; ſo that you would find ſomewhat leſs difficulty in giving credit to the young man, and to a woman, who ſaid that ſhe had been with child by him: for the former aſſerted that when he made water with the penis a little rais'd, the urine ran out through the ſemicanal; and the latter that the ſemen, ejaculated by him, enter'd the vagina, and was not loſt.

At leaſt the urine, when he diſcharg'd it againſt the wall, we ſaw to aſcend higher than the orifice of the urethra. Nor did it eſcape us what the ſtructure of the penis can bear; and what de Graaf (*a*), and Harvey, whom he quotes, had ſeen on this account; I mean that a penis "which appear'd "very ſmall, at firſt ſight," when it was inflated, "had ſtretch'd itſelf out "into a large body, from being almoſt hid: and that ſometimes, "except "when it was excited by a tentigo, it had not been at all prominent in the "corrugated ſcrotum, except in the extreme apex of the glans."

We therefore conceiv'd, that when this ſmall indeed, but not very ſmall, penis extended itſelf; the young man at the ſame time affirming it; that part thereof in which the orifice of the urethra was ſeen, was ſtretch'd in its length, and by this means ſufficiently enter'd the vagina; and that, by the inferior paries of this cavity, applying itſelf to the remaining part of the open urethra, the ſemicanal was chang'd into a perfect canal: juſt as happens to the ſemicanals which I have deſcrib'd in the Adverſaria (*b*), in the penis of the tortoiſe, and the viper, when receiv'd in the genitals of their females.

Indeed I do not know, whether, in the infant of three months old, who Palfin (*c*) has told us was ſeen by him, as the canal of the urethra terminated in the ſame part that it did in our young man, ſo a ſemicanal was continued quite on to the glans: but this I know, that if the conformation of that child was the ſame as the conformation of this young man, the prediction that this diſeas'd ſtructure "would render him incapable of procreation, and "cauſe great inconvenience in the diſcharge of his urine, is but little to be "depended upon."

Yet I am not ignorant, that the ancient phyſicians, and ſurgeons, even in thoſe men, in whom the canal of the urethra is produc'd quite to the glans,

(*u*) N. 37.
(*x*) Eph. n. c. cent. 9. obſ. 72.
(*y*) Tom. 3. p. 3. n. 28.
(*z*) Cent. cit. tab. 2. fig. 1.
(*a*) De Viror. Organ. ubi de Nervoſ. Penis Corporib.
(*b*) IV. Animad. 4.
(*c*) Anat. du Corps hum. p. 1. tr. 2. ch. 17.

but opens beneath it; who are for that reaſon call'd *hypoſpadiæi*; have pronounc'd the ſame thing, in regard to the faculty of generation: and this opinion is confirm'd by the more modern authors, and particularly by Dionis (*d*), where he points out ſome cauſes of this diſorder, even after birth.

But I wonder nevertheleſs, that, as they have read our Fabricius; which appears from their writings; they have made no exceptions to ſuch a prediction; but have aſſerted that the work of a ſurgeon is quite neceſſary here; as he has expreſly admoniſh'd us (*e*), "that he had nevertheleſs ſeen children, "which had been begotten" by thoſe, who were affected with this diſorder; which others (*f*) alſo have confirm'd.

Wherefore, I the more commend Ruyſch, who; having formerly ſuppos'd (*g*) that a diſorder, not unlike that, for inſtance, which I have deſcrib'd, "brought on an incapacity of procreation;" has ſo moderated his aſſertion afterwards (*h*), as to ſay, "that thoſe who labour under this diſorder rarely "impregnate their wives."

But to return to thoſe in whom the urethra happens to be open in a great part of it, and form'd into a long ſemicanal; in the year 1756, before I reviſ'd this letter, another ruſtic young man, of two and twenty years of age, was brought to me, who had the ſame kind of formation as the other; except that the ſemicanal, at its beginning, was a little diſtant from the upper part of the ſcrotum, which was cover'd with hairs, and had a conſiderable diviſion into two parts.

In this young man, alſo, the urine did not fall down at his feet, but was thrown againſt the wall: and the penis, when diſtended by a tentigo, became from a ſhort one, conſiderably longer; as he himſelf affirm'd.

And as this was conſonant to reaſon, ſo the appearances; and in particular the length of the ſemicanal, which was but little leſs; render'd it not at all improbable, that this young man had, likewiſe, impregnated a woman; as both of them confeſs'd.

Thoſe who ſaw, at Peterſburg; many years after the publication of Valliſneri's obſervation and mine (*i*); the urethra lying open after the manner of a ſulcus, or ſemicanal; being ſolicitous about determining the ſex (which was an inquiry we had not the leaſt occaſion to make) did not once inquire, whether this ſtructure could intirely take away the power of procreation.

And the celebrated Abraham Kaau Boerhaave, when he produc'd their obſervations, ſtood up for our opinion; which he ſeems not to have ſeen: for which you will alſo ſuppoſe the celebrated Haller (*k*) to argue, where he ſpeaks of it in a curſory manner; and ſuppoſe that he would have argued for it in a boy alſo; in whom he ſaw a like deformity; if he had ſeen him in an advanc'd age: for the boy was no more than three years of age, at the time he examin'd him.

I do not refer to this claſs the obſervation of Salzmann (*l*), on a ruſtic young man, whoſe urethra paſs'd not below, but above and betwixt the nervous

(*d*) Cours d'Operat. de Chir. Demonſtr. 3.
(*e*) De Chir. Operat. ubi de glande non perfor.
(*f*) Eph. n. c. dec. 1. a. 3. obſ. 91.
(*g*) Muſ. Anat. thes. c. Repoſ. 1. n. 1.
(*h*) Theſ. Anat. 8. n. 30.
(*i*) Nov. Comment. Acad. Sc. Imp. Petropol. tom. 1. in Phyſic.
(*k*) Comment. Soc. R. Sc. Gotting. tom. 1.
(*l*) Act. n. c. tom. 4. obſ. 65.

and

and ſpongy bodies, in an open ſtate, on the back of the penis; becauſe here, as the figures ſhow (*m*), the penis was ſo much the ſhorter in proportion to its thickneſs, nor increas'd much from venereal ideas; and alſo becauſe it was a little curv'd downwards; and laſt of all becauſe the urine did not flow out with impetus through the urethra. On account of all which circumſtances, it was with juſtice ſuppos'd, that the young man was not fit for the propogation of his ſpecies.

9. And I judg'd in the ſame manner of another young man, who was thirty years of age, although he neither had the urethra on the back of the penis, not the whole of it open. This man I carefully examin'd, as I was requeſted to do, and as the caſe itſelf requir'd, in the year 1738.

He was leſs robuſt than the other two, that I inſpected; yet was pretty healthy and well, except his eyes and his penis; the former of which were blind from an old and conſtant inflammation, and the latter was in the ſtate I ſhall preſently deſcribe.

He himſelf readily acknowledg'd, that his wife was in the ſame ſtate of virginity, in which he had married her three years before. He ſuppos'd the cauſe to be, that the glans was curv'd towards the inferior part, and not perforated at the apex, but below; and for that reaſon obſtructing both the entrance of the penis, and the ejaculation of the ſemen.

After hearing theſe things, I examin'd the genital parts, and found them in the following ſtate. The teſtes were large: the ſcrotum was not pale indeed, but very lax: the penis was of a proper proportion, both in length, and thickneſs: the preputium was of the ſame kind that I have deſcrib'd in the two other young men, ſimilar to the præputium clitoridis: for it ſufficiently cover'd the upper ſurface and ſides of the glans; but was deficient on the inferior ſurface.

And on the whole of the ſame ſurface of the glans, and for a little ſpace below the glans, the inferior paries of the urethra was alſo wanting; ſo that, like a ſemicanal, only the upper paries continued to the extremity of the glans; being ſmooth and of a ſlightly red colour, and in the middle, in a longitudinal direction, ſhowing very clearly three orifices, of the larger canals, which I have ſpoken of in the Adverſaria (*n*); being in the form of an ellypſe; orifices of which kind, and more indeed, and thoſe ſomewhat larger, we had ſeen in the firſt young man in particular; whereas in none of theſe did any ſmall foramina of the leſſer canals appear, though ſought after with attention: for I do not doubt but the figure, which I have refer'd to above (*o*), was deſcrib'd from memory; as, beſides orifices that paſs in one right line through the middle, it repreſents ſo many other foramina, here and there, at the ſides.

Moreover, the orifice of the canal of the urethra, in this young man of whom I have begun to ſpeak, was in that part, from whence I have ſaid that the ſemicanal began: and a very little below that, the inferior paries of the urethra was perforated with another leſſer orifice: and the young man ſaid that urine came from both of them; and that he had heard from his mother, that he was born with this conformation.

(*m*) Tab. 6. fig. 1. & 2. (*n*) I. n. 10. (*o*) Ad n. 8.

Then inquiring into the cauſe of curvature in the glands, when I ſaw that the ſkin was pretty lax, which adher'd to that part near to the oriſices whereof I have ſpoken; and not tenſe and contracted ſo as to curve the glans; I inquir'd whether, when the penis was turgid, the glans was turgid alſo; and whether, at that time at leaſt, any troubleſome ſenſe of tenſion was perceiv'd; and particularly at the place of the ſkin's adheſion juſt now pointed out. To both of which he anſwer'd in the negative.

He only added this, that in his early puberty, when the penis was tumid, this troubleſome ſenſe had been perceiv'd in that part; but after a few years having paſs'd was perceiv'd no more: and although, when he married his wife, the glans ſometimes ſwell'd together with the penis, yet from the time, that, in making vain endeavours to enter the vagina, a great quantity of ſemen had been pour'd out with great quickneſs; from whence he ſaid that his opthalmia became more ſlight, and his ſight leſs dull; the penis only became tumid, and the glans hung down flaccid, and without any voluptuous inclination.

It was evident that what he could not perform with a tumid glans, it was impoſſible for him to do with it flaccid. And the reaſon why it had formerly been flaccid in general, and was always ſo now, I ſuppos'd to be that male conformation of the urethra, which I have now deſcrib'd.

For, as the inferior paries of this canal was wanting in that part, where it is wont to be increas'd by a pretty thick corpus ſpongioſum dilating itſelf to make up a conſiderable part of the exteriors of the glans; it is to be ſuppos'd that the blood, which is protruded upwards for the proper diſtention of the glans, muſt have had a leſs quick paſſage thither: and this conjecture was confirm'd to me, by the ſame ſpongy body of the urethra; as from thoſe two orifices, quite to the root of the penis, I obſerv'd it to be thicker than uſual in this young man; without doubt from the blood not having a free paſſage into the glans, and therefore being collected below it: ſo that, in proportion as it added thickneſs to this ſpongy body, ſo much did it detract from the length, and by this means curve the adjoining glans downwards.

But none of theſe circumſtances took place, in the other young men whom I examin'd; becauſe that body extended its inferior paries, not at all, or but juſt above the ſcrotum; and the ſuperior paries, or that which is receiv'd betwixt the nerveo-ſpongious bodies of the penis, was certainly very thick, as happens in ſome perſons, ſo that it could ſufficiently communicate with the glans.

You will perceive this, in ſome meaſure, from the figure given by Ruyſch, which, in his century of obſervations, is mark'd ſeventy-ſix: and thoſe things that I conjectur'd in the young man laſt deſcrib'd, you will conceive of far more clearly, from the eighty-firſt, and eighty-ſecond figures, of the ſame century, when compar'd with the ſeventy-fifth.

10. By the ſeveral things which have been juſt now ſaid, you ſee that what the more modern phyſicians, and Boerhaave, in particular (*p*), have taught very clearly; from conſidering the ſtructure of the penis with great accuracy; are confirm'd: I mean that the corpus ſpongioſum urethræ, and the glans,

(*p*) Prælect. ad Inſtit. §. 674.

may

may be tenſe and tumid, while the corpora penis remain flaccid, or are even abſent; for ſo our Plazzonus (*q*) ſaw it; and on the contrary it may happen, that the glans may remain flaccid, while theſe bodies of the penis are diſtended: for in either the one or the other way, the buſineſs of generation may be injur'd.

Moreover, there are many and various impediments to diſtention; juſt as there are many and various cauſes of this diſtention. Among which cauſes, not only the real, but the apparent, plenitude of the veſiculæ ſeminales, ſeems proper to be plac'd.

I call it apparent at that time, ſince there is not ſo much ſemen in the veſicles, as they can really contain at another time; but as much as they can contain at that time.

Thus, upon waking in a morning, even ſome old men are ſenſible of a tentigo, which they immediately get rid of by diſcharging their urine. For the urine diſtended the bladder, and this compreſs'd the ſubjected veſicles; but particularly by that baſis of it which extuberates on the back-part, and which I have ſpoken of; ſo that, by this means, their capacity being diminiſh'd, they were juſt as much diſtended, even with a ſmall quantity of ſemen, as they would have been with a great quantity when not compreſs'd.

And indeed the moſt experienc'd phyſicians, and among theſe Gulielmus Ballonius (*r*), have taken a very uſeful hint from this phænomenon. Let him who is not very potent in his generative faculties, ſays he, "perform "copulation after much titillation, with his urine retain'd, and having a "great deſire to diſcharge it."

So what the ſame perſons have obſerv'd after Galen (*s*); that among the marks of a ſtone in the bladder, the penis ſometimes "is immoderately "tenſe;" we ſhall account for in the ſame way: and eſpecially where there is a very large calculus.

And I have ſaid in the ſame way, without being ignorant that theſe phænomena may be explain'd in other ways alſo. Yet there are caſes in which one explication may be preferable to another: and, indeed, it may even ſometimes happen, that many cauſes, of the ſame kind, may conſpire to produce the ſame effect.

11. But of men I have ſpoken ſufficiently. Now let us paſs on to women; beginning with two, whoſe genital parts I was requeſted to examine with accuracy, in the ſame manner as thoſe of the three young men mention'd above.

One was a ruſtic woman, whoſe pudendum was in a perfect and natural ſtate. But that *canal*, as they call'd it in the time of Celſus (*t*), into which it opens, and which we now call the vagina, had ſcarcely run on more than a third part of its proper length, when it ſuddenly terminated in that part.

There was no cicatrix at that place, nor below it: the woman herſelf, or her parents, could none of them call to mind any ulcer, or any other preceding diſorder, in conſequence of which the ſides of the vagina might have coaleſc'd; for if theſe parts are ulcerated, either from the lues venerea, from a difficult birth, or from any other cauſe whatever, where the careleſſneſs of the ſur-

(*q*) De Partib. Generat. l. 1. c. 21.
(*r*) L. 2. Conſil. Med. 26.
(*s*) De loc. aff. l. 1. c. 1.
(*t*) De Medic. l. 4. c. 1. ad fin.

geon, or the midwife has co-operated with the diſorder, how eaſily the ſides of this canal may grow together we are taught by many examples; ſome of which will be pointed out to you by Marcellus Donatus (*u*): and others I ſhall take notice of below.

However, not only nothing of that kind had preceded in this woman; but every part moreover; being ſmooth, ſhining and equal, when you had open'd, and dilated, that part of the vagina which there was; appear'd in ſuch a manner, that you might plainly perceive not only the ſides of this canal to be in their original ſtate; but that the part by which they were bounded, was a kind of roof, or ceiling, form'd by the firſt inſtitution of nature; being of the ſame ſtructure, and made up of the ſame ſubſtance. Nor indeed did this roof or ceiling in the leaſt give way, either to the finger when preſs'd againſt it, or to the penis of the huſband; which had now, for three years ſpace, been frequently forc'd againſt it. For it was not like a membrane which was drawn tranſverſly; but reſiſted like a very ſolid and thick paries.

Having remark'd theſe things, I inquir'd of the woman; who was as yet in the flower of her life, and enjoy'd perfect health; whether ſhe, like other women, did not perceive blood to flow from thence ſometimes, if not every month; or, at leaſt, if, at certain intervals, pains did not ariſe about the loins, and the pubes; but ſhe anſwer'd to all theſe things in the negative: ſo that I began to ſuſpect the ſame thing as in the ſecond: and after deſcribing to you her caſe, I will communicate my ſuſpicion to you.

12. This ſecond woman related, that ſhe was not indeed imperforate, but had ſo very narrow an aperture, that an eminent phyſician in a city of great learning, who was at the ſame time a ſurgeon, having examin'd her in early puberty, adviſ'd that this aperture ſhould be gradually dilated, by introducing ſuch things as were proper for that purpoſe; but that every thing elſe a more mature age, and a huſband, if ſhe ſhould marry, would accompliſh.

She likewiſe ſaid that ſhe had introduc'd ſomething of the kind recommended at ſometimes, and in ſome meaſure; and had by this means a little dilated the orifice of the foramen; but could bear no farther dilatation: that her huſband alſo, to whom ſhe had been married three years, had by frequent attempts ſomewhat more inlarg'd the ſame orifice; but never could enter it.

After hearing this relation, I inſpected the parts with this intention, that if a pretty thick hymen, or one that open'd by a very ſmall foramen, were the obſtacle, I would perſuade her to undergo the inciſion, as other practitioners have done, and among theſe Blaſius (*x*); but if the ſtricture went very high up into the vagina, that I would conſider what, and how far any thing, was neceſſary to be done; for the celebrated Benevoli had not as yet given his example of an equally eaſy and ſucceſsful cure (*y*), to ſerve as a pattern for our imitation; as his obſervations did not come out till many years after.

For the method of cure which is given us by Blaſius (*z*), as perform'd on a certain woman, to whom this had happen'd from child-bearing, was too ſevere; not to ſay, that, on account of the inteſtinum rectum being wounded, it was very long in being compleated.

(*u*) De med. hiſt. mirab. l. 6. c. 2.
(*x*) Part. 2. obſ. med. 6.
(*y*) Oſſervaz. 2.
(*z*) Part. 2. cit. obſ. 7.

And that the woman being at length made pregnant, as happen'd to her whoſe hiſtory is given by Antonius (*a*), the vagina might be dilated even by utero-geſtation itſelf, I was rather cautious of ſuppoſing; as I conſider'd this in the number of very extraordinary inſtances.

And you will, at leaſt, ſee that the ſame thing did not happen to another woman, who is ſpoken of in the ſame books (*b*); and you will alſo ſee with how much labour, and if you attend to what follow'd, with how much danger likewiſe, Benevoli (*c*), together with Querci, was oblig'd, during the pains of child-bearing, to dilate the vagina, which was contracted for half its length, by reaſon of a wound which had been receiv'd in childhood; whereas thoſe two may ſeem to have been born thus.

Theſe five women, however, had, all of them, a ſmall foramen, through which there was ſome paſſage to the uterus: ſuch as I alſo ſuſpected there was in her whoſe hiſtory I have begun to deſcribe.

But when I ſaw the foramen, of which the woman had ſpoken, I immediately knew that it was the orifice of the urethra out of its ſituation; and that thanks ought to be given to God, that the woman could not ſuffer any farther dilatation of that paſſage; as, if ſhe had, the conſequence, without doubt, would have been, that ſhe could never have retain'd her urine.

From whence you perceive, that ſo great a want of anatomical knowledge, as not to diſtinguiſh the orifice of the urethra, to the great detriment, or at leaſt to the danger, of the patient, is not only found in vulgar ſurgeons and barbers; of whom ſome ſimilar inſtances are related by Platerus (*d*), and Peter de Marchettis (*e*); but alſo in phyſicians of eminence: unleſs it is more proper, in this caſe, to accuſe either the haſte of the examiner, or the prejudg'd opinion that he had form'd to himſelf, from what had been improperly related to him of a narrow foramen.

Then turning my eyes to that part of the genitals, which follows next behind this orifice; that is to ſay, in which the orifice of the vagina is wont to open; not the ſmalleſt foramen, nor perforation, appear'd any where to the inquiring eye, though never ſo attentively applied: this place was intirely ſhut up, not with a membrane which would yield to preſſure, but with a very firm and ſolid paries.

As I was in doubt what advice in particular to give; for the queſtion was not here of "the genital part being concreted," as in Cornelia the mother of the Gracchi (*f*), that is, of the edges of it "being agglutinated to one "another," as Celſus ſays (*g*), or of "a membrane plac'd at the opening of "the *vulva*," which the ſame author takes notice of (*h*) (the methods of cure in which caſes are neither unknown nor difficult) but of a caſe which call'd to mind one that I had read in Nabothus (*i*), of a phyſician endeavouring to remove, with the knife, a coalition of the vagina, which had likewiſe been from the birth, but being oblig'd to deſiſt from his attempt, when he ſaw that the coalition was continued up very high, and that the large ſanguife-

(*a*) Hiſt. de l'Acad. R. des Sc. a. 1712 obſ. anat. 2.
(*b*) Hiſt. a. 1748. obſ. anat.
(*c*) Oſſervaz. 5.
(*d*) Obſ. l. 3. ubi de part. Procid.
(*e*) Obſ. Med. Chir. 60.
(*f*) Apud. Plin. Hiſt. Nat. l. 7. c. 16.
(*g*) De Medic. l. 7. c. 28.
(*h*) Ibid.
(*i*) Diſput. de Sterilit. Mulier. n. 7.

rous veſſels appear'd; and alſo brought to my thoughts the opinion of Nabothus (*k*), that "if there be a fleſhy interſtice," by which we muſt underſtand a pretty thick one, "it is better to abſtain from the inciſion of it, "partly on account of the very great hæmorrhage, and partly on account of "the inflammation that would follow:" as I was turning over theſe things in my thoughts then, it very properly came into my mind, to aſk the ſame queſtions that I had aſk'd of the former woman (*l*), whether any menſtrual blood had ever been excreted? Whether ſhe had any uneaſineſſes at intervals in the loins, or the pubes?

For, from the time of Ariſtotle's having ſaid (*m*), "that in ſome women "the os uteri, being compreſs'd, and incorporated with the other parts, had "continu'd in this ſtate from their earlieſt time of life, quite to the time of "their catamenia; but that, ſoon after, the menſtrua coming upon them, and "they being troubled with pain, this coalition was ſpontaneouſly ruptur'd in "ſome, and in others cut aſunder by the hands of the phyſicians;" I well remember'd how many, and what kind of, evils, a number of women had ſuffer'd from the menſtruous blood being collected in the vagina, and the uterus; till the ſurgeons before and after our Fabricius ab Aquapendente (*n*), reliev'd theſe diſorders by cutting the impervious membrane, at the orifice of the vagina: for that Fabricius ſhould have doubted (*o*), whether this was what Ariſtotle meant by the os uteri in that paſſage, I am greatly ſurpriz'd; as if the occluſion of the orifice, of the vagina, might not be ſo great ſometimes, that, whether the obſtructing membrane be "violently ruptur'd," as Ariſtotle ſays, or as Fabricius ſays, cut aſunder "in ſome women," as the former had immediately written, death might be the conſequence of it; for that this may be the conſequence, you even ſufficiently conceive, from what I have juſt now hinted on the ſubject.

And how many, and various, diſorders theſe women had ſuffer'd before their cure, we may learn, by examples, from Donatus (*p*), from Severinus (*q*), from the two Fabricii, both ours (*r*), and Hildanus (*s*), from Ruyſch (*t*), and from Nabothus (*u*). To which you will moreover add thoſe that other authors, and among theſe the celebrated Fantonus (*x*), and Kannegiefferus (*y*), have deſcrib'd.

For Benevoli, who had cur'd three patients of this kind, by reaſon of his mentioning the caſes in a curſory manner (*z*) only, has omitted to add, with what diſorders they had been previouſly affected.

Nor indeed, have thoſe women only, who were born with an occluſion of their vagina, been ſubject to theſe diſorders; but thoſe alſo in whom the orifice of the vagina had grown together, after a difficult birth: to which kind

(*k*) Ibid. n. 23.
(*l*) N. 11.
(*m*) De Generat. Animal. l. 4. c. 4. ſub. fin.
(*n*) De Chirurg. Oper. ubi de Hymene imperfor.
(*o*) C. ſeq.
(*p*) C. ſupra ad n. 11. cit.
(*q*) Chirurg. Effic. P. 2. ubi de Section. c. 46.
(*r*) Loc. cit.
(*s*) Cent. 2. Obſ. Chir. 60. exempl. 3.
(*t*) Cent. Obſ. Anat. Chir. 32.
(*u*) Diſp. cit. n. 4.
(*x*) Opuſc. Med. in Schol. ad Patris, obſ. 30. n. 3.
(*y*) Act. n. c. tom. 6. obſ. 88.
(*z*) Oſſervaz. 1.

of hiſtories you will add that which you find taken notice of in the Commercium Litterarium (*a*).

For when there is no perforation at all (from what cauſe ſoever this may be) through which the blood flowing together within the uterus may be diſcharg'd; this retain'd fluid muſt, of courſe, produce conſiderable diſorders.

But if there be any foramen, ſuch women are not to be conſider'd as quite imperforate; nor is it to be wonder'd at if ſome of them become impregnated: as of thoſe five, whoſe very great narrowneſs of vagina I ſpoke of juſt now, three actually were; as another was alſo, whoſe caſe is deſcrib'd by Hildanus (*b*); whereas, in the membrane that ſhut up the vagina, there were ſome very ſmall foramina.

Wherefore, in all theſe women, the menſtruous purgations were diſcharg'd by the natural paſſages, though theſe paſſages were very ſmall: and if this circumſtance were inquir'd into by ſome perſons, who had it not in their power to inſpect theſe paſſages, but only to learn from the huſbands of the women, that their wives were impervious to them; it would be a ſufficient teſtimony, to prevent them ſuppoſing, that, when theſe women became pregnant, this muſt have happen'd without the admiſſion of the ſemen virile: and we ſhould, perhaps, have fewer examples, in books, of women being quite imperforated, than we have at preſent. But as theſe women were not without their menſtrual purgations, ſo they were free from the diſorders which we have ſaid that blood collected in the vagina and uterus muſt of courſe bring on.

Having then conſider'd all theſe things, and hearing, not only that neither of theſe women, whom I examin'd, had ever had any menſtrual purgation, but not any uneaſineſs or pain tending thereto, nor even the ſlighteſt beginning of them; and on the other hand, ſeeing that both of them were endow'd with very good health, colour, and ſtrength; as every healthy woman is at that time of life which may yet be conſider'd as the prime; I began to ſuſpect, that, as they were without a continued and open canal, or orifice of the vagina, they might, perhaps, alſo, be without a uterus, from the original formation: ſo that if the obſtacle could even be remov'd by the ſurgeon's knife, there would, nevertheleſs, be danger, leſt the bladder, or ſome one of the inteſtines, lying in contact therewith, in conſequence of the uterus being abſent, ſhould be pierc'd through at the ſame time; in the ſame manner as there was a very conſiderable danger, of this kind, in infants (of whom I have already ſpoken (*c*)) who had the anus imperforate, and, at the ſame time, a total deficiency of the inteſtinum rectum.

I therefore perſuaded both theſe women placidly to ſuffer a marriage, which was improperly contracted, to be diſſolv'd; rather than imprudently ſubmit themſelves to the inciſion.

13. Nor would I have you object to me that there have not been wanting, nor are at preſent wanting, women who live in very good health without any menſtrual purgations: for I confeſs it, and even know ſome ſuch

(*a*) A. 1754. hebd. 25. ad finem.
(*b*) Obſ. 60. cit. exempl. 2.
(*c*) Epiſt. 32. n. 3.

myſelf;

myſelf; but I have often had the ſame doubts in regard to them, that I have had in regard to the two whoſe hiſtories I have deſcrib'd.

Yet you will ſay; there are many who have born children, and, nevertheleſs, been without theſe purgations. But take away, from the number of them, all thoſe that live in a climate far different from ours: take away thoſe that they call viragos: take away even thoſe who do not enjoy perfect health; and you will find that theſe many will be reduc'd to a very few.

Yet even upon this ſuppoſition, you will ſay, there are more in number, than of thoſe who are born without a uterus. And I would confeſs this compariſon to be properly made, if it were as eaſy for phyſicians to obſerve the number of the latter, as it is to obſerve the number of the former.

For the former, of themſelves, ſpontaneouſly declare it, inaſmuch as it is a circumſtance; if you conſider the ſex in general, and the regions of the world, in general, that are not very remote; which is certainly very rare and ſurprizing.

And out of all the others, who, compar'd with thoſe very few, are ſo many the more in proportion; I mean out of all thoſe who live in good health, without theſe purgations, but never bear children, how many of their bodies have been diſſected after death? And unleſs you diſſect them, certainly neither they themſelves, nor any one elſe, can inform us, whether they are furniſh'd with a uterus, or not.

Since, therefore, it is impoſſible to know either caſe for a certainty; who, that is a prudent man, would be ſo bold as to undertake to remove an obſtruction of this kind, that he may happen to meet with, in like manner as he would, if he were certain that there was an uterus within; when, at the ſame time, the operation is neither neceſſary to preſerve life, nor to remove any diſeaſe; and perhaps not only without any advantage, but even dangerous; eſpecially if the obſtruction be ſuch, that either its ſituation, or its thickneſs, and hardneſs, ſhow it not eaſy to be remov'd, and not without great danger?

I know of two women (for I have not the book, by me, in which the third is ſpoken of, who is refer'd to by the celebrated Caſpar Boſe *(d)*; but I read of a fourth *(e)* who was imperforate, and without any traces of a vagina, yet not without ſome ſlight, though uſeleſs, appearance of the uterus); I ſay I know of two women, whom anatomy has ſhown to have been born without a uterus; the one diſſected by our Columbus *(f)*, the other by his celebrated fellow-citizen Fromondus *(g)*; ſo that this very circumſtance is a proof to me, that many more of thoſe who never have had any menſtrual diſcharge, might have been found, by anatomiſts, to be without any uterus: for though this may ſeem to be very extraordinary, yet it muſt ſeem much more extraordinary, that if there had been no other inſtance of the kind, both of theſe ſhould have happen'd to be met with by anatomiſts of Cremona.

As in both of theſe women the uterus was wanting, ſo alſo an open paſſage, that led to the ſeat of the uterus, was wanting; ſo that you may compare the firſt, in whom there was only a portion of the vagina, with the for-

(*d*) Diſp. de Obſtetric. Errorib. & cæt. §. 7. in fin.

(*e*) Diſp. Anat. ab Haller. collect. tom. 5. p. 227.

(*f*) De Re Anat. l. 15. in ipſo fine.

(*g*) Imperfor. Mulier. & cæt. Obſervat.

mer

mer of the two that I examin'd; and the other, who had the orifice of the vagina imperforate, with the latter of thoſe that I inſpected.

If any ſurgeon had attempted to open the paſſage, in that body ſeen by Columbus; he would, at the ſame time, have cut into ſome viſcus, that was contiguous to the fund of that vagina; from the compreſſion of which viſcus, it, perhaps, was, that the woman "complain'd in a ſurprizing manner, whenever ſhe copulated with her huſband."

If any perſons had undertaken to cure with a knife, that woman ſeen by Fromondus; they would, firſt indeed, have met with a ſeptum which was ſtrong and firm, "and ſo interwoven with ſolid fibres, as to approach nearly "to the nature of a cartilage."

And while this was cut through, which would neceſſarily require ſome force, nothing could more eaſily have happen'd, than that, while they ſuppos'd themſelves at the entrance of the cavity of the vagina, they ſhould wound the parietes of that cavity, which had coaleſc'd with each other; and perhaps even the rectum inteſtinum, which lies in contact with them, or the urinary bladder.

Finally, theſe parietes muſt have been ſeparated. And who can take upon him to ſay, that none of theſe circumſtances were to be apprehended, in the women inſpected by me? Nobody certainly; nor yet that the uterus was not wanting in theſe, as it had been in thoſe who were diſſected.

Beſides, the uterus is ſometimes ſo ſmall, even in adult women, as to have the ſame effect that the abſence of the uterus would have: which I ſhall confirm below by my own obſervation (*b*); if, as I have already ſpoken of the external orifice thereof, that is the orifice of the vagina, being ſhut up, you will firſt give me leave to add a few things, in regard to its os internum being obſtructed.

14. Mention is made of the os uteri being ſhut up, in more than one of the books of Hippocrates (*i*). The cauſes of this occluſion may be many and various: the greater part of which have been examin'd by Valliſneri (*k*), who divides them into the external and internal. Let us conſider ſome of them.

Among theſe they plac'd formerly, with Hippocrates (*l*), "the omentum "compreſſing the os uteri," in very fat women. And in what manner Veſalius explain'd this, you will learn, ſomewhat more at large, from the Sepulchretum (*m*); for Veſalius himſelf contracted that paſſage (*n*) in his later editions.

Without doubt this excellent anatomiſt ſaw, on the one hand, how ſoft the omentum is, and, on the other, how thick, and capable of reſiſtance, the parietes of the oſculum uterinum are.

He therefore conceiv'd the omentum to deſcend ſo far betwixt the bladder and this orifice, that, by preſſing the ſoft parietes of the vagina, at its upper part, one againſt another, it might ſhut up the paſſage, for the ſemen, to

(*b*) N. 20.
(*i*) De Nat. Muliebr. n. 33; de Morb. Muliebr. l. 2. n. 50; de Sterilib. n. 1. & cæt.
(*k*) Iſt. della Generaz. p. 3. c. 1. n. 5. & ſeq.
(*l*) Sect. 5. aph. 46.
(*m*) Sect. hac 34. obſ. 4. in Schol. ad §. 4.
(*n*) De Corp. Hum. Fabr. l. 5. c. 4.

the

the neighbouring os internum, by its bulk, and weight; ſo that the penis when introduc'd, eſpecially if pretty ſhort, or languid, could not reach to the upper part of the vagina, nor be able to diſtend it.

Which explication of Veſalius, I can with leſs difficulty admit, than ſuffer that ſome of the more modern anatomiſts ſhould follow the naked dogma of Hippocrates: although I cannot conceive of the omentum, as lying betwixt the upper part of the vagina and bladder, unleſs we ſuppoſe the cellular connexions, which uſually are ſeen betwixt one and the other, in that part; and even ſometimes a little higher; to be torn through: which connexions, as, in very fat women, they are themſelves ſtuff'd up with fat alſo, may not, perhaps, yield ſo eaſily, and give place to the weight of the omentum.

And as, in women of this kind, all the cellular membranes are diſtended with fat; it is natural to conceive, that, from the neighbouring inteſtines being very fat, or from fat being accumulated in the membranes of the Falloppian tubes, in their fimbriæ, or, at leaſt, in the membranous ligament which they call the alæ veſpertilionum, all theſe parts, or ſome of them, may be obſtructed in their motions neceſſary to generation; for thus I chooſe to interpret Valliſneri (*o*), or at leaſt to add ſomething to his explication.

15. And among the cauſes which obſtruct the os uteri, the ſame author ſuppoſes, together with others, excreſcences form'd in the cervix uteri (*p*); and with Hippocrates himſelf, ſtones alſo (*q*). The obſervations that I have made upon excreſcences I defer to the next letter.

Calculi I have never yet found in the uterus: which, however, I know have not only been ſeen formerly in that place, by others, but even in my own memory; and theſe hiſtories are refer'd to by Valliſneri.

But I could wiſh that he had read many, and even all, of thoſe that are collected by Schenck (*r*); as, in another place (*s*), he has with difficulty granted this: "that it is not improbable, but even ſtones may be, alſo, generated in the uterus."

For by reading over theſe hiſtories, and by adding others moreover; as, for inſtance, that you meet with in Bartholin (*t*), and in like manner that which you have in the Sepulchretum (*u*); he would have underſtood very clearly, that ſtones had been actually found, in the very uterus of women, after death, ſo many times, and by ſuch men, that it was not at all neceſſary to ſuſpect, that if any calculi were ſaid to have fallen, or been taken out, from the uterus of living women (as, for inſtance, in that ſervant-maid Lariſſæa ſpoken of in Hippocrates (*x*)), they had been diſcharg'd from the bladder; notwithſtanding no particular ſymptoms of a ſtone form'd in the bladder, did now exiſt, or had preceded; rather than from the uterus.

16. Moreover, among the internal cauſes that ſhut up the os uteri, is the conſtriction, or conglutination, of that orifice, examples of which you will find produc'd by the celebrated Haller (*y*); whereto you may alſo add others:

(*o*) N. 5. cit.
(*p*) Ibid. n. 6.
(*q*) Ibid. n. 7. & c. 2. n. 42.
(*r*) Obſ. Med. l. 4. prope fin.
(*s*) Opere t. 3. p. 3. n. 12.
(*t*) Cent. 4. Hiſt. 64.
(*u*) L. 3. ſ. 24. obſ. 18. §. 10.
(*x*) Epidem. l. 5. n. 12.
(*y*) Ad Prælect. Boerhaav. ad Inſtit. §. 675. not. *i*.

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as thoſe of our Fabricius ab Aquapendente *(z)*, and the very experienc'd Benevoli *(a)*; from whoſe obſervation you may ſuſpect, that, beſides the conſtriction, there was, perhaps, ſome membrane, which ſhut up the os uteri, even from the original formation.

And indeed the ſame Fabricius *(b)* ſays, that he, by introducing his fingers into the vagina in the living body, had obſerv'd "the membrane which "forms the vagina, to be continued through the whole, and conceal the ori- "fice of the uterus:" and Littre *(c)* ſaw, in the diſſection of a barren woman, the membrane that inveſts the vagina, internally, adhering to the os uteri in the ſame manner as it did to the ſurface of the vagina; by which means that orifice was ſhut up.

But Hippocrates did not doubt *(d)* that a membrane might "grow out "over this orifice," even after birth. "When a woman cannot admit the "male ſemen, it cannot be," ſays he, "but that a membrane muſt have "grown out over the oſculum uteri." What I have ſeen of this membrane, the following obſervation will ſhow you.

17. A woman of fifty years of age; who was ſo lame that the lower limb, on the right ſide, was ſhorter by four fingers breadths, than the left; died of an aſthma in the hoſpital, about the latter end of January in the year 1747: at which time I was teaching anatomy, as uſual, in the college.

The cheſt was very narrow, and when open'd ſhow'd water to be contain'd therein: other circumſtances they did not inquire into, as they were in haſte, and ſolicitous about nothing elſe, but to take out, with accuracy, the parts which are form'd for the ſake of the urine, and for generation, and to bring them to the college.

I examin'd the parts deſtin'd to both theſe offices with attention. In the former, after having ſeen the arteries which go off from the annex'd large trunks, and the iliac veins, to be more ſlender on the right ſide, than on the left; I obſerv'd the kidnies to be not ſmall, when compar'd with the ſtature of the woman which was of the loweſt: theſe kidnies were ſound nevertheleſs, as far as I could judge: ſo alſo in the bladder, the lower part of which appear'd to be affected with a phlogoſis, I remark'd that the orifices of the ureters were ſomewhat larger than uſual.

In regard to the genital parts; to paſs over what does not belong to this place, and in particular the hymen, and other things, which ſhow'd the woman to have been a very perfect virgin, contrary to our expectation; firſt, out of theſe things which I had it in my power to obſerve without diſſection, there was the ſame phlogoſis in the hymen only, and the neareſt external ſurface of the pudendum; and from this ſurface, likewiſe, aroſe very ſmall preternatural tubercles, which were in like manner red: and there was a phlogoſis alſo in the Falloppian tubes, and the alæ veſpertilionum: but the teſtes were ſcirrhous, and of a ſurface that was divided into a kind of ſquares, or chequer-work.

(z) De Chir. Oper. ubi de Vitiis quor. cauſ. Fœminæ concubit. non admit.
(a) Oſſervaz. 1.
(b) Loco modo cit.
(c) Hiſt. de l'Acad. R. des Sc. a. 1704. obſerv. anat. 13.
(d) De Sterilib. n. 13.

Then opening the fundus uteri, and the upper part of the neighbouring cervix, I obſerv'd the ſurface of the former to be of a bright red colour; but the ſurface of the latter not to be ſo much as inclin'd to redneſs.

In the fundus, whether you look'd upon its anterior, or poſterior parts, were very low excreſcences, of no inconſiderable circumference however; being ſmooth, and ſcarcely ſunk lower than the ſurface; which were of a red colour, and more inclining to brown than the reſt of the ſurface.

Moreover, in order to examine the remaining part of the cervix, before I cut into it, I paſs'd a thin probe from the fundus uteri towards the orifice; but found that the paſſage to this orifice was not open.

Wherefore cutting into the vagina, and bringing this orifice to view, I endeavour'd to paſs up a probe from the lower opening, but in vain; where upon I examin'd the part with attention, and ſaw that the orifice, and its prominent corona, were in a natural ſtate, except that, at a little ſpace below the orifice, it ſhow'd ſome ſmall corrugation as it were.

The orifice itſelf was very narrow, and quite in the form of a circle. When I examin'd it internally; at a very little diſtance from thence, a ſmall whitiſh membrane came to view, which perhaps ſtreighten'd the paſſage, but certainly ſhut it up: and this made an obſtruction to the probe, either in paſſing upwards, or downwards.

Nor indeed was this to be reckon'd among the valves which I have delineated (*e*), in a former work, in the cervix of the virgin uterus; for none of theſe ſhut up the paſſage of the cervix except in part, and are all of them ſo ſituated, as to reſiſt the aſcending probe indeed, but to give way to the deſcending.

Yet I will not deny but this little membrane, which I juſt now deſcrib'd, might be perforated with ſome ſmall foramen, as Littre (*f*) ſaw in his; or had at leaſt left a very ſmall interval in ſome part of its circumference, betwixt itſelf and the parietes of the cervix; ſince I found no fluid collected in the uterus: unleſs we ſuppoſe it to be a membrane not of long ſtanding, and that the fluid might have been taken up by the abſorbent veſſels.

18. And I ſhould rather ſuppoſe, that Nabothus (*g*) had refer'd to ſomething of this kind, or a ſomewhat more interior appearance, when he ſaid, "that "an extraordinary narrowneſs of the internal orifice, of the uterus, could no "more be known" in the living body, "than a ſolitary diſeas'd conforma- "tion of the ovula." For this learned man could not be ignorant, that it had been more than once aſſerted, to this effect, by Hippocrates (*b*): if the "os uteri is ſhut up; it becomes thick, as if the woman were pregnant: "and if you touch it with your finger, you will find it hard and convoluted, "nor does it admit the finger;" and that experienc'd ſurgeons do every day, by introducing their finger, for examination, reach quite to the os uteri, eſpecially when the woman is in a ſtanding poſture.

And indeed the ſame orifice, in a different poſture of the woman; that, for inſtance, in which they introduce what is call'd the ſpeculum uteri; may be brought into view, even without that ſpeculum, as I have more than

(*e*) Adverſ. Anat. 1. tab 3.
(*f*) Supra ad n. 16. cit. loco.
(*g*) N. 20. Diſp. ſupra ad n. 12. cit.
(*b*) De Morb. Muliebr. l. 2. n. 50. & de Nat. Muliebr. n. 33.

once ſeen: eſpecially if the vagina be pretty ſhort; by introducing, for example, inſtead of the ſpeculum, an ivory or chryſtal funnel, of a proper length and breadth; and a light at the ſame time, if it be neceſſary; in the manner which was formerly pointed out by me, on another occaſion (*i*).

19. The obliquity of the os uteri, alſo, may reſiſt the entrance of the ſemen. And this obliquity of the os uteri, is the natural conſequence of the obliquity of the uterus; as Hippocrates (*k*) has taught us, by ſaying, "if "the uterus becomes oblique, the os uteri becomes oblique alſo." But as I am to treat of the oblique uterus in another letter (*l*), I go on, at preſent, to ſubjoin my obſervation, of the very ſmall uterus, which I have promis'd you.

20. A little woman; of about ſixty-ſix years of age, of a ſtature much below the middle ſize, yet much larger than to be claſs'd with the ſpecies of dwarfs; who, having been for many years the wife of a porter, that was now dead, a robuſt man, but weak in his mental abilities; had never born any children; laſt of all, before the middle of December 1749, came into the hoſpital in a very weak ſtate, but complaining of nothing beſides hunger (for ſhe was a beggar) and of the injuries of the cold ſeaſon. While ſhe lay in the hoſpital therefore, to repair her ſtrength, behold ſhe was ſeiz'd with a ſudden deliquium animi, and within an hour was carried off.

On opening the belly, they immediately found the cauſe of her ſudden death, that is, an abſceſs ruptur'd in the meſentery; whereby a great quantity of ſtinking matter was diſcharg'd into the cavity of the belly: which circumſtance brought on the fatal event, in this old woman, ſo much the ſooner, than in the carman deſcrib'd by the illuſtrious Heiſter (*m*), as her ſtrength was ſo much the more pull'd down, as I ſuppoſe, and her time of life ſo much the more advanc'd.

And when this matter was exhauſted, and wip'd away, and the meſentery, together with the inteſtines, remov'd, they immediately went on to take out the urinary, and genital, parts from their ſituation, agreeably to my orders; as both of them were to be demonſtrated there, to the ſtudents in anatomy, in the ſame manner that I had, the day before, demonſtrated theſe urinary and genital parts from a male.

And this I did, not to ſhow them the natural ſtate of the parts, as at other times; but that they might ſee their preternatural ſtate, when it ſo happen'd, and in part the more rare conſtitution thereof.

And in the kidnies indeed, there was ſuch a diſorder, as to ſhow thoſe veſicles full of ſerum, partly prominent on the ſurface, and partly half-buried in the ſubſtance; eſpecially the right, which had a large one at its lower extremity, and the ſurface beſides, if you look'd upon it attentively, unequal.

Yet the ureters were not dilated, but even open'd by very ſmall orifices in the bladder, which was ſound; except that, notwithſtanding the reſt of the coats were contracted into themſelves, the external was, nevertheleſs, not

(*i*) Epiſt. 14. n. 13.
(*k*) Libro noviſſime cit. n. 34.
(*l*) Epiſt. 42. n. 31. & ſeq.
(*m*) Diſſ. de Hern. Carnoſ. §. 28.

only very lax, but even eaſily ſeparable from the other: ſo as to follow the hand upon being ſlightly drawn.

Finally, if you look'd upon the internal ſurface of the urethra, which was of a proper length, you might ſee ſome very ſmall veſicles here and there.

But, in the genitals were a great number of deviations, from the uſual order of nature. For to ſay nothing of the ſmallneſs of the pudendum in a woman of that age, and the wife of a porter, and the very remarkable diminutive ſtate of the nymphæ, ſo that only the beginning of them, and that very ſhort, and ſlight, appear'd; the glans and præputium clitoridis were nowhere at all to be met with: but in the place of both theſe parts, was a round and but little prominent tubercle, cover'd over with the ſame ſkin as the pudendum itſelf.

Upon cutting into this tubercle, I found a quantity of matter, entirely of the ſame nature with that which is collected under the præputium of the clitoris, and of the penis; being whitiſh, and half-dried, and, for that reaſon, diſpos'd into pellicles, as it were, which lay one upon another, as it generally does in a dried ſtate: and under almoſt the lower part of that matter, I found the glans clitoridis, and its præputium; both of them ſlender and ſmall; ſo that the much greater part of this protuberance was made up of that matter.

And theſe things I have here deſcrib'd the more at large, becauſe, by this obſervation, a certain doubt (which Santorini (*n*) had weaken'd) of Boerhaave's (*o*), who was in other reſpects a very great man, is remov'd.

For certainly, as the ſkin, when cut into by me, ſhow'd neither any ſign of a foramen, nor had the leaſt trace of any cicatrix; the matter could never have been collected there, that had come from the ſmall canals of the urethra; nor yet from the other neighbouring glands; ſo that it is now very evident this matter muſt be deriv'd from the ſources which are in the glans, or præputium, of women; and conſequently, of men alſo.

However, neither the body of the clitoris, nor the crura, nor any of thoſe muſcles which are generally aſcrib'd thereto, were wanting: but the plexus retiformis was of a very ſlender thickneſs.

And although but juſt a ſlight trace or two of the hymen remain'd, yet the orifice of the vagina was ſo narrow in its dimenſion, that it ſeem'd never to have admitted a man: it certainly did not equal the dimenſions of my middle finger in any direction, nor would have admitted it.

The breadth of the vagina, when open'd longitudinally, and diſplay'd, was ſcarcely more than two fingers breadths, at the ſame time that the length was not equal to four. There were no caruncles within, no rugæ; if you excepted a very ſhort and narrow corrugation, as it were, behind the other ſide of the orifice of the vagina.

The os uteri was ſurrounded with no protuberating corona, and was almoſt of the form of a circle; but ſo ſmall as not to admit the head of a little probe.

(*n*) Obſ. Anat. c. 10. §. 12. (*o*) Epiſt. de Fabr. Gland.

From thence, to the upper and outer part of the fundus uteri, there was not ſo much diſtance as to be equal to the largeſt breadth of my thumb. Nor was the upper part, that is the wideſt part, of the uterus, wider than the length I have mention'd; for the other part did not equal even the width of the point of my little finger; even if look'd upon before it was cut into.

In cutting into it, I found the thickneſs of the parietes, both of the fundus, and of the cervix, to be conſiderably leſs than in that figure of de Graaf, where (*p*) he repreſents the uterus of an infant, who died on the twenty-third day after ſhe was born; and where they are repreſented to be extremely thin.

From this figure, when compar'd, in length, with that which I refer'd to juſt now, you will eaſily conceive, that the uterus of this woman, of whom I ſpeak, does not ſeem to have increas'd ſince the time of her birth; or if it grew in length in its upper part, at leaſt that it had grown far leſs, in proportion, than the other parts of the body, though in a little woman; and certainly, that it had never diſcharg'd any menſtrual blood.

However, as you ſee in that figure, ſo in this woman alſo, the cavity of the cervix was twice the length of the fundus uteri; but in the cavity of the cervix ſome fibres only could be very obſcurely ſeen, and theſe in a longitudinal direction: and the internal ſurface of this cavity was white; whereas that of the fundus was of a reddiſh colour inclining to brown.

Nevertheleſs, the Falloppian tubes were much longer than ſuch a ſmallneſs of the uterus ſeem'd to promiſe; and the orifice betwixt the fimbriæ was open: although I found the fimbriæ of one of them externally rough with whitiſh, and roundiſh bony bodies, or at leaſt ſuch as were very hard in their conſiſtence.

In the alæ reſpertilionum was no plexus; yet many nerves ran upon them in the longitudinal direction. The round ligaments of this uterus were very ſlender. But the broad ligaments were very large: which was the conſequence of the uterus being ſo very contracted in its breadth.

I look'd upon the upper edges of theſe ligaments, to ſee what kind of teſtes this woman had been furniſh'd with; but look'd to no purpoſe. Then purſuing the ſpermatic veſſels with great accuracy, which ſeem'd to be not much ſmaller in this body than uſual; particularly where they went to the broad ligaments of the uterus, with the neighbouring portion of the peritonæum (from whence theſe ligaments begin) which was ſtill annex'd to them; I very clearly perceiv'd that ſhe had never had any teſtes, nor even the moſt obſcure beginning of them.

21. From theſe appearances, which I demonſtrated in a very crowded circle of ſtudents, you muſt, in my opinion, be abundantly convinc'd, that it was juſt the ſame thing to this woman, to be furniſh'd with ſuch a very ſmall uterus, as if ſhe had been entirely without. And how rare this ſmallneſs deſcrib'd by me is, you yourſelf will be able to judge, from all the examples of a ſmall uterus that are collected together in the Sepulchretum.

Amatus indeed ſays (*q*), "that a uterus of this kind," that is to ſay, a

(*p*) De Mulier. Organ. tab. 24. fig. 4. contra litteram G ſiniſtram.

(*q*) In additam. ad ſect. hanc 34, obſ. 2.

con-

contracted and ſmall uterus; " is every now and then ſeen in ſome women; " particularly in barren women, and thoſe that have born no children: and " in theſe women the breaſts are alſo ſmall and contracted, ſo that from " them even the ſmallneſs, and contracted ſtate, of the uterus may be ar- " gued."

And indeed I have known ſome barren women, who had ſcarcely any appearance of breaſts; or indeed none at all, beſides the nipple and the areola. But what kind of uterus is it that Amatus refers to? Why one that he had ſeen " betwixt the inteſtinum rectum, and the bladder, in a contracted ſtate, " ſo as to be taken, by unſkilful obſervers, for another bladder."

But can you ſuppoſe that any perſon whatever, even the moſt unſkilful, could have taken that which I ſaw for a ſecond bladder; ſo very ſhort and narrow as it was, and almoſt of no thickneſs at all?

And the ſame reply may be made, in reſpect to the obſervation of Judecius (*r*), on another barren woman, which repreſents the uterus as being " con- " tracted to the ſize of a ſmall apple." Which obſervation is taken no notice of in this ſection, as according to the intent of the ſection it certainly ought.

But it is taken notice of in another (*s*), wherein the uterus is ſaid to have been " very ſmall and contracted, like that of a girl of ten or twelve years of " age." Which, for this reaſon, was nothing in compariſon to the ſmallneſs of that obſerv'd by me; although that, beſides, could not be ſaid to be compreſs'd by the bag, which took its beginning from thence, and fill'd the capacity of the belly, even from ſix years of age.

Finally, two obſervations are deſcrib'd from Riolanus (*t*), which, if you read them ſomewhat attentively, you will find to be one and the ſame. Nor indeed is there any other difference, except that, in the former editions of the Anthropographia (*u*), from whence the firſt obſervation is copied, the name of the matron is mention'd; and in the later editions, from whence the ſecond is taken, is omitted; for as to the number of the chapter correſponding in neither place, probably this may be owing to the careleſſneſs of the printers: but the tubercle, which is taken notice of in the cervix, and is conſider'd, in the Sepulchretum (*y*), as the cauſe of barrenneſs, Riolanus ſeems, if you attend to what he has premis'd, to have conſider'd as the cauſe of fecundity; eſpecially as this matron had not been barren, but had even brought forth three children.

But be theſe things as they will; what concerns our preſent ſubject is, that, although " ſhe died at the age of fifty-five, ſhe had her uterus very " ſmall, very hard, and almoſt cartilaginous.

You ſee however, that the degree of ſmallneſs remains undetermined by the author; and although this might have been very conſiderable, yet it had not been ſo from the birth, as it was in a woman who had brought forth three times; but you ſee that it was from a diſeaſe, which, as it had made the uterus ſo hard afterwards by degrees, might alſo have been the cauſe of its contraction.

(*r*) Quæ 1. eſt in additam. ad ſect. 10. l. 2.
(*s*) Sect. hac 34. obſ. 4. §. 17.
(*t*) Ibid. §. 3. & 5.
(*u*) Ut in illa a. 1626. l. 2. c. 34.
(*x*) Ut in illa a. 1649. eod. c.
(*y*) Vid. inter titulos obſ. 4. poſt n. 4.

And

And I would have you call this to mind, when you light on other obſervations of this kind, and particularly on one in which (z) you will read, that the uterus of a woman, who had been carried off by a long-continu'd encyſted dropſy "did not exceed the magnitude of a nutmeg; yet was in-"durated like a cartilage." And another obſervation (a), wherein they found the uterus "ſmall like a pidgeon's egg," you will have opportunity of explaining in the next letter (b).

22. But in my obſervation there was, moreover, this extraordinary circumſtance, that the teſtes were wanting: which were not wanting even in both of thoſe women, in whom we have ſaid that there was no uterus at all (c); but only in the firſt. And if I were determin'd to give you a particular account, in this letter, of all the diſeas'd appearances that I have ſeen in the teſtes, and the tubes, by diſſection; this letter would grow out to a more enormous ſize than any other.

But without doubt I ſhould be only giving myſelf needleſs trouble, ſince I have either given accounts of them in letters already paſt, or ſhall hereafter give them. I will therefore hint at ſome things here, which otherwiſe I ſhould not find a proper occaſion to introduce; firſt of the tubes and then of the teſtes.

23. In diſſecting the genitals of a woman, about fifty years of age, and demonſtrating them in the hoſpital, in the beginning of April in the year 1743; I obſerv'd the following things.

The corona of the os uteri, which was very thick, had, moreover, a roundiſh prominence from one part; which, on cutting into it, I found to be white internally, and, to appearance, ſcirrhous. And neither of the tubes admitted a very thin probe, which was already introduc'd through the larger orifice to ſome extent, beyond that place: and, in fact, I found both of them to be quite impervious.

24. I diſſected the brain, and genital parts, of another woman, who had been taken off by an acute diſeaſe of the thorax, ſucceeding to a chronic, before ſhe was forty years of age; but the brain it is not our buſineſs to ſpeak of here: as to the parts of generation; which I demonſtrated in the ſame place and the ſame year, and about the middle of December; I found ſome appearances in them, that well deſerve to be related here.

To begin with the pudendum, in which the hymen, being uninjur'd, ſhow'd this woman to have been a virgin; the rediſh horns of the ſemilunar, and, in other reſpects white, hymen, terminated in a kind of rediſh ring; with which the tumid extremity of the urethra was ſurrounded.

And the other orifice of the urethra, which opens towards the bladder, and the internal ſurface of the urethra that was neareſt to it, was diſtinguiſh'd with parallel, thick, and protuberant lines drawn longitudinally; which lines were veſſels diſtended with blood.

The vagina, the oſculum, and the cervix uteri itſelf, I found to be in that ſtate in which they generally are.

(z) Commerc. Litter. a. 1731. Spec. 19. n. 2.
(a) Eph. n. c. cent. 1. & 2. obſ. 105.
(b) N. 26.
(c) Supra, n. 13.

But

But the fundus uteri protuberated ſomewhat more than it generally does; nor could I find the cauſe of this protuberance in the parietes, which were in a natural ſtate: but I found it to be in the cavity, upon the ſurface of which three excreſcences were form'd.

The largeſt of theſe was ſomewhat leſs, in its circumference, than the nail of a man's thumb; not very thick, and looſe on every ſide: unleſs where it was join'd, by no very ſlender peduncle, with the upper ſide of the left part of the cavity: internally and externally it was in great part ſo full of blood as to be quite black: and it was ſomewhat leſs hard than the ſubſtance of the parietes of the uterus.

At the upper part of the oppoſite ſide was an equal blackneſs likewiſe; but no excreſcence in that part.

The ſecond excreſcence was at a little diſtance below that place, being ſomewhat round in its figure, rather ſmall in its ſize, and nearly of the ſame nature with the firſt.

The third which was very ſmall, was ſituated a little below the firſt; and, when prick'd with the point of the knife, diſcharg'd a water, as if it contain'd an hydatid within its outer ſhell; which was of a black colour inclining to that of blood.

Having examin'd theſe parts ſufficiently, and turn'd my eyes to the alæ veſpertilionum; in each of them, betwixt the teſtis itſelf and the tube, I obſerv'd three or four globules of a larger or leſſer ſize; hard in their conſiſtence, and of a red colour inclining to brown; ſo that at firſt ſight, I ſuppos'd them to be ſcirrhous conglobated glands.

But, upon applying the ſcalpel, under the membranous cortex, which was of the colour I have mention'd, I found a nucleus of a white colour, ſmooth, and eaſily falling out; ſo hard that you would have doubted whether it was of a bony, or a ſtony nature: and in its figure and magnitude, if you conſider'd it when taken out of the larger globule, it reſembled a middle-ſiz'd pea.

The leſſer globules each contain'd a nucleus ſimilar to this, but leſs in its ſize; except that, in one of the ſmalleſt, inſtead of a nucleus, was a white but ſoftiſh matter: ſo that you would naturally have ſuppos'd the hard nuclei to have been form'd by the concretion of this matter.

You plainly ſee what impediment there muſt have been to the motion of the tubes, and their nearer approach to the teſtes, by the weight and interpoſition of this kind of globules. But the teſtes moreover were dry, contracted, and ſtrigoſe. And the tubes were impervious, in the ſame manner as I have related of the former woman; except that they, nevertheleſs, admitted a very thin probe ſomewhat nearer to the uterus.

25. Although I have, in fact, ſometimes found the ſame kind of occluſion in the Falloppian tubes, of other women likewiſe, as well as in theſe two; which you learn from other letters; yet I at the ſame time confeſs, that there have been ſtill more, in whom, though I thought them to be ſhut up at the firſt trial, I nevertheleſs found, by a more accurate examination, that they were really pervious: and what I had written in the firſt of the Adverſaria (*d*), formerly, I have ſince confirm'd at different times.

(*d*) N. 30.

And

And that the ſame has likewiſe been obſerv'd by others, is prov'd by the teſtimony of the very experienc'd Haller (*e*); who ſays that "Morgagni, "in the firſt of his Adverſaria, juſtly argues againſt Ruyſch, that the tubes "are not ſo very frequently obſtructed." But as Ruyſch, in the obſervation (*f*) which it is ſurprizing to find not added to the Sepulchretum, had very clearly propos'd two modes of obſtruction of theſe tubes; one of which is when they are very cloſely coaleſc'd, at one extremity, with the teſtis, the ſecond when they are obſtructed in a different manner; it might have been evident to every one, who read theſe Adverſaria of mine with attention, that I had not ſpoken at all of the firſt mode; as this is ſo evident, that it does not require any ſtrict examination, to bring the obſtruction to the cleareſt view.

And this being the ſtate of the queſtion, I confeſs, that, when I read what Ruyſch replied in his own behalf (*g*); notwithſtanding I thought myſelf much oblig'd, by the very great humanity which that excellent anatomiſt exercis'd towards me, I was, nevertheleſs, equally ſurpriz'd that I ſhould have "ſeem'd" to him, "never to have ſeen, in my own anatomical inquiries," that coalition of the tube with the teſtis.

For I had ſeen it, and have even ſeen it ſince, as my letters to you demonſtrate; and not only in old women (*h*), but in young women alſo (*i*): and ſometimes in both of them on both ſides (*k*); at other times on one ſide only (*l*). But I have other obſervations ſtill remaining, two of which I will take the trouble to tranſcribe here.

26. An old woman having died from a blow on the head, her genitals, together with the urinary parts, were brought to me, when I was delivering my public lectures in the college, about the end of January in the year 1743.

The trunk of the aorta, where it deſcended betwixt the kidnies, had its internal ſurface very unequal on every ſide; from the upper part quite to the termination; and in a manner corroded, by reaſon of bony ſcales, which were ſo thickly ſtrown, that the orifices of the lumbar arteries could not be known without difficulty.

And the tubes of the uterus were ſo grown to, and confounded with, the teſtes; which in other reſpects were not tumid; that one of them in particular, which was intirely without the fimbriæ, could not at all be diſtinguiſh'd from the teſtis.

27. About the ſame time of the year, but in the year 1746, the genitals of a woman; who died, within about the thirtieth day after her delivery, of a ſlow fever; were brought to me to the ſame place, in as perfect a ſtate as they could be procur'd.

For the teſtis, and tube, on the right ſide, were agglutinated to each other, and to the neighbouring inteſtinum colon, and, in part, already deſtroy'd by an abſceſs; which I ſuppoſe to have been the principal cauſe of her fever and death.

(*e*) Hiſt. Diſſect. Fœm. gravid. §. 2. not. *b*, & ad Prælect. Boerhaav. ad Inſtit. §. 668 not. *e*.
(*f*) Cent. Obſ. Anat. Chir. 83.
(*g*) Adverſ. Anat. dec. 1. c. 2.
(*h*) Epiſt. 12. n. 2.
(*i*) Epiſt. 38. n. 34.
(*k*) Ibid. & Epiſt. 21. n. 47.
(*l*) Epiſt. 29. n. 14. & Epiſt. 26. n. 13.

The ſtate of the uterus, ſuch as was to be expected in a woman who had lately born a child, I ſhall deſcribe in another place: it will be ſufficient to remark, in this place, what ſeem'd to be morbid.

That is to ſay, ſome part of the corona of the os uteri, looking on it anteriorly, was of a violet-colour, inclining to blackneſs: but by cutting into it alſo, I obſerv'd, within the ſubſtance of its parietes, a blackneſs, as if from blood ſtagnating within the dilated veſſels; from the orifice quite to one half the extent of the cervix.

Finally, the left teſtis did not differ in its colour, and magnitude, from any ſound teſtis. Yet its ſubſtance was ſofter than uſual, and when cut into more moiſt; ſo that it might ſeem to be made up of a kind of jelly as it were, rather than of any other ſubſtance.

There was no where any appearance of the corpora lutea, nor any veſicle; if you except a ſpherical little cell of the bigneſs of a ſmall grape, empty, and made up of a thickiſh and whitiſh coat. Which cell, being ſituated under the very membrane of the teſtis, had given marks of its exiſtence before the teſtis was cut into. For under an obſcure kind of cicatrix, correſponding to that cell, ſomething of a yellowiſh colour was ſeen to ſhine through.

28. I do not think that you will take an argument from this ſtate of both the teſtes, and one of the tubes, in order to refute the opinion which is now embrac'd by moſt learned men; or at leaſt a great number of them.

For you not only know, how eaſily arguments of this kind, which were formerly inculcated by Nabothus (*m*), and others alſo, are invalidated; but even others which are more difficult to appearance; as, for inſtance, when they object the caſe of a certain woman; who having been pregnant only for ſo ſhort a time, that the fœtus was ſcarcely equal to the length of a little finger; had, nevertheleſs, both of her teſtes in a ſcirrhous ſtate.

For it is ſufficient, that, when a woman conceives, no leſs a part of either teſtis is ſound, than belongs to one mature veſicle, or rather to one mature corpus luteum. And when this has perform'd its office, if itſelf alſo is vitiated by the extenſion of the diſeaſe, and degenerates into the nature of a ſcirrhus, as well as the other parts; it is no objection at all to the opinion in queſtion.

And what forbids us to aſſert, that it may be vitiated within a few weeks, not to ſay within thoſe nine months of utero-geſtation?

For which reaſon it is the more ſurprizing, that there ſhould have been any one, within this little time, who made objections to that opinion, from the tubes being found, by him, to be without fimbriæ, and the orifice, that is between theſe fimbriæ, to be quite ſhut up, in a woman who had born a child eight years before: as if it were neceſſary to believe, that the child was born while the woman was in this ſtate; and not that ſhe had rather been injur'd, in thoſe parts, by a diſeaſe which was not of long ſtanding: eſpecially as "a certain pyriform bulb, turgid with whitiſh and fluid matter," which it is moſt probable was pus, occupied the place of the fimbriæ.

But "fictions help the underſtanding," ſays he, "though they do not demonſtrate the truth of the matter."

(*m*) Diſput. de Sterilit. Mulier. n. 11. & 12.

Yet

Yet where there is no room for demonſtrations, and the opinion, which is attack'd by arguments of that kind, is already very well ſupported by reaſons, and obſervations; we muſt ſee what is the moſt probable, and agrees the beſt with theſe reaſons and arguments, in order to reply to the objections.

And that you may perceive, how differently the thing appears to me from what it does to him; he thinks that not even eight years are ſufficient to bring on diſorders of this kind: but to me it ſeems that even the very time of a difficult birth is ſometimes ſufficient; provided the time of lying-in is not very happy afterwards.

For, in ſuch a birth, the vehement and frequent ſtrainings urge the gravid uterus (as I have already (*n*) hinted) againſt the teſtes, and the ſubjected tubes; which parts are preſs'd againſt the bones of the pelvis, and contract the beginning of an inflammation, which is ſoon after increas'd by the lochia, for inſtance, when they flow but very ſparingly.

And I ſuppoſe theſe things to happen ſo much the more eaſily, in proportion as violent and frequent vomitings, during the courſe of the foregoing utero-geſtation, have preſs'd upon, and ſhaken theſe parts; or ſome other cauſes have begun to injure them, and diſpos'd them to contract the diſeaſe.

But omitting theſe things, let us return to the hiſtories; and as I have hinted at ſome things, in regard to the peculiar diſorders of the tubes, and in regard to thoſe which are common to the tubes and the teſtes; let us now alſo ſay ſome things briefly, in reſpect to the peculiar diſorders of the teſtes.

29. A woman, of about forty years of age, had been formerly attack'd with an apoplexy; which returning, at length carried her off. I was at this time giving the public demonſtrations of anatomy, in the year 1725: but no other parts were brought into the college, beſide thoſe which are ſubſervient to the offices of generation, and the ſecretion of urine.

The trunk of the great artery, where it lay betwixt the kidnies, ſhow'd, internally, ſome very ſlight beginnings of bony ſcales. The kidnies themſelves, which were not furniſh'd with a very great quantity of fat on their external ſurface, were nevertheleſs ſtuff'd up therewith, to ſuch a degree, betwixt the papillæ, that I never remember to have ſeen more.

Both the teſtes were contracted and lank; but the right by far the moſt ſo: and from thence an hydatid was prominent of the figure and magnitude of a cheſnut, containing a browniſh water within thicken'd coats; which were, on their internal ſurface, ſmooth and equal.

In the left teſtis a round cell was quite buried, not larger than a very ſmall grape; being made up of white and thickiſh parietes, that were internally unequal, and contain'd a ſmall quantity of humour.

However, in neither of them was there any of the natural veſicles.

30. As theſe veſicles are neceſſary to generation, whether they, as moſt perſons believ'd, are eggs, or rather are chang'd into the corpus luteum; it is juſt the ſame thing, you ſee, whether they are perfectly wanting, or do not contain that fluid which they ought to contain.

Wherefore, it is not to be wonder'd at, if a woman; who was in other reſpects healthy, and young; and married to a young man of a robuſt conſtitu-

(*n*) Epiſt. 39. n. 38.

tion; in whom Valliſneri (o) found all the veſicles full of a turbid, and fuliginous matter, which had but little fluidity, was barren.

And there was great reaſon to fear, that another young woman; who died within an hour after her firſt delivery, in both of whoſe teſtes Alexander Bonis wrote to me that he had ſeen, with Santorini, a great number of veſicles of various magnitudes, containing a pellucid humour indeed, but in which a ſmall white corpuſcle was ſeen, which veſicle ſoever you examin'd; there was, I ſay, great reaſon to fear, leſt this woman would have been barren, if ſhe had liv'd.

And this obſervation of my moſt reſpectable friends, I have the more readily taken notice of to you; that you may perceive this to be the effect of diſeaſe, which ſome authors of note have conſider'd as a proof of the veſicle being become fæcundated.

31. How many obſervations of my own, of diſorders in the teſtes of women, I might add to theſe beſides; if I were not cautious of being too prolix; you will conjecture even from thoſe things which I have formerly thrown out in the firſt of the Adverſaria (p), in regard to the diſorders of thoſe parts; ſome of which I had found very rarely, and others very frequently.

And as many, in confirming the ſame things, have taken notice of this paſſage; ſo I do not know why but very few (among whom in particular was the celebrated Paitoni (q)) have ſhown that they had read the other paſſage, where, in the fourth Adverſaria (r), I have ſaid what I thought of the nature of theſe veſiculæ, and the corpora lutea, and their uſe, together with my reaſons for my opinions; whereas many authors, nevertheleſs, ſince the year 1719, in which thoſe things were publiſh'd, muſt have repeated the ſame things in their writings.

But to return to the firſt paſſage; they who have abus'd thoſe obſervations of mine, or ſimilar ones of other authors, ſo as to contend either that the teſtes are uſeleſs, or that women would for the moſt part be barren; either have not obſerv'd, that theſe diſorders are not generally met with in the diſſection of young and ſound women, or that it is not neceſſary for conception, that every part of both teſtes ſhould be found; nor finally although beſides the teſtes, there are ſo many other parts in women, which are themſelves liable to diſeaſes, and yet are neceſſary for the procreation of children, that it nevertheleſs does not happen very ſeldom, nor yet for the moſt part, nor yet from the ſame cauſe, that women either are actually barren, or become ſo; and that Hippocrates (s) had formerly ſaid with great propriety: "and ſo many and various kinds of diſorders happen to women, on account of which "they do not bring forth, before they are cur'd of them, and many by which "they become quite barren; that women need not be ſurpriz'd they do not "bear children, though they have frequent commerce with man." Farewell.

(o) Iſt. della Generaz. p. 2. c. 5. n. 14.
(p) N. 30.
(q) Della Generaz. dell' Uomo Diſc. 3.
(r) Animad. 28.
(s) De Sterilibus n. 5.

LETTER

LETTER the FORTY-SEVENTH

Treats of Diſorders in the menſtrual Flux, and of the Fluor Muliebris.

ALTHOUGH Bonetus has given a particular ſection to each of theſe ſubjects; that is the thirty-fifth, and thirty-ſixth; yet I have more than one reaſon for compriſing both theſe ſubjects in a ſingle letter.

For in the firſt place, I have obſerv'd this circumſtance, that if you take away the long and frequent ſcholia; and thoſe frequently ſuch as are quite uſeleſs, ſince more conſiſtent doctrines have been taught in the medical ſchools; you will find that not many obſervations remain in thoſe otherwiſe ſhort ſections.

In the ſecond place, I have obſerv'd that there are ſome of theſe, as Bonetus himſelf confeſſes, which have been propos'd by him in other places; and even that there are ſome, which are repeated in one and the ſame ſection, without his being aware of it; as, for inſtance, in the thirty-fifth, the fourth obſervation is repeated, in the laſt article under the ſeventh obſervation, that is in article the tenth; and in the thirty-ſixth ſection, you will find what is read under the firſt article of the firſt obſervation, repeated under the ſecond article.

And theſe repetitions are ſo much the leſs tolerable, becauſe either the hiſtory is imperfect in the ſecond place, as in the ſecond example; or even in both places, as in the firſt. Nor would I have you ſay that the readers are, in both caſes, refer'd to the ſection intitled *de ventris tumore*, book the third. For we muſt turn over a hundred and eighty-ſix large pages, in order to light on that hiſtory at length; which begins in far different words, and is for that reaſon leſs eaſy to be found, under the fifty-fifth obſervation, in article the twenty-third: but even there it is not accurately copied, nor amended by any needful animadverſions.

For the author of the hiſtory, I mean Dodonæus, in that very thirty-fourth chapter which is refer'd to, had ſaid, that no excrementitious matter had been diſcharg'd from the uterus of this virgin, through the whole of the diſeaſe, notwithſtanding the uterus was ulcerated; and that becauſe "the hymen, "which nature has granted to virgins, prevented the diſcharge."

But in the Sepulchretum, inſtead of *quod natura virginibus conceſſit*, we read

qui natura virginibus concreſcit. That is, if it convey any idea at all, which naturally grows together in "virgins."

Yet read it which way you will, how do the menſes flow out in other virgins? And even in this very woman who was "fifty-five or fifty-ſix years of "age," if they had not flow'd out before the diſeaſe; how could Dodonæus have omitted that circumſtance?

Wherefore neither *quod natura conceſſit* nor *qui natura concreſcit* can be admitted of.

Laſt of all, I wonder that ſome obſervations, together with their ſcholia; as that for inſtance which we have in the thirty-fifth ſection under obſervation the firſt; do not, as the intention of the ſection requir'd, relate to the cauſes of diſeaſes; but to the natural ſources of the menſtruous blood: and that theſe, if you attend to the obſervations produc'd, are determin'd to be in the vagina: which indeed I have never denied; although it has never yet happen'd to me, to ſee them elſewhere than in the fundus uteri: nor can I lay any great ſtreſs upon ſome reaſons they make uſe of to confirm this circumſtance; as that, for example, which is ſubjoin'd in the ſcholium to article the ſecond of the firſt obſervation; I mean that "ſometimes cancers "or ſchirri of the vagina come on: and that ſo much the more if the men-"ſtrua are deficient; becauſe the blood which was wont to be purg'd off, is "delay'd there for a very long time, ſtagnates and becomes of a hot nature: "whereas thoſe malignant ulcers and tumours more rarely are form'd in the "fundus and cavity of the uterus itſelf."

For whether this, to take no notice of other things, does happen "more "rarely," the greater part of the obſervations in the next ſection will ſhow you.

But let us omit the conſideration of theſe things, and of the third obſervation which relates to the natural cauſe of the menſtrual purgation; with the very prolix ſcholia that are the conſequence of it; and bearing in mind the intention of this letter, firſt, in regard to the menſtrua, let us copy from the obſervations of Valſalva, thoſe things which relate to the morbid ſtate thereof.

2. A virgin who ſeem'd of a ſalacious diſpoſition, or was at leaſt very lively, had never yet had any menſtrual diſcharges, when ſhe died in the nineteenth year of her age. The uterus was very ſmall: yet the length of the fundus was not leſs than that of the cervix.

3. This is ſufficient to ſhow you, that the uterus had nevertheleſs increas'd more in this virgin, than in that woman whom I deſcrib'd in the former letter (*a*); notwithſtanding it was very ſmall indeed, and ſmall for that age: and this obſervation will confirm the conjecture I made in regard to the former woman, that ſhe had never been menſtrually purg'd.

For it may excite a ſuſpicion in us, whether the appearance of the menſtrua, in ſome virgins, who are in other reſpects healthy, full of alacrity, and have attain'd to a proper proportion of body; when it happens ſome years later than it does in general; whether, I ſay, this appearance ſhould not be aſcrib'd, ſometimes, to the very ſlow increaſe of the uterus.

For I knew a noble virgin; that is to be number'd in the claſs of thoſe of

(*a*) N. 20.

whom

whom I have been ſpeaking; who, being married before her menſes, which had been expected for ſome years, appear'd, was nevertheleſs very fruitful: and that we may the leſs be ſurpriz'd thereat, the very ſame thing had likewiſe happen'd to her mother.

And without doubt, it is much better, where the young women are in good health, to wait and do nothing; as I did in that caſe; leſt by our inopportune remedies, we perhaps cauſe a delay in the work of nature, which ſhe performs later in ſome than in others.

4. Another virgin, who had now been without any menſtrual purgation for many years, and had been long troubled with ulcers in the tibia, died in a tabid ſtate.

In the thorax, and belly, was a ſtagnant water. The teſtes were without any veſicles, and conſiſted of a ſubſtance of a whitiſh colour; which bore a reſemblance to the pancreas, but was of a ſofter nature. On the internal ſurface of the uterus were a great number of glandular bodies protuberant; except that in the upper part of the fundus there were but few obſerv'd.

5. This, you ſee, is another example, that may be objected to ſome phyſicians, who are too buſy in bringing on an appearance of the menſes. For they do not conſider how various, and different from one another, the cauſes of their not flowing may be; and immediately have recourſe to ſuch things as excite them: as if the uterus itſelf were always ſufficiently prepar'd to tranſmit the flux which they provoke.

Therefore they frequently increaſe the cauſe of the diſorder, inſtead of removing it.

Theſe remedies ſucceed very well, in moſt of thoſe perſons where the blood is viſcid, or inert from too great a quantity of ſerum; as I have, for the moſt part, ſeen this to abound in blood that has been taken away by venæſection; the remaining part being generally contracted into a cylinder, of a more ſlender ſhape and conſiſtence than uſual; when this purgation was wanting either wholly, or in great part: and indeed I have obſerv'd the ſame, even in a certain woman whoſe menſtrua had been accidentally ſuppreſs'd, in the middle of their courſe, by a fright; though this had happen'd only five or ſix days before.

But how can theſe remedies have a good effect, not only when the blood is, on the contrary, of a more hot diſpoſition, or in greater plenty in the conſtitution; but when the blood itſelf is in a proper quantity and ſtate, and the uterus is, nevertheleſs, very dry, and contracted; or, which you may ſuſpect from certain long-continued diſorders, as in the virgin in queſtion, affected with ſome organical diſeaſe?

Without doubt it is more proper ſometimes, to moiſten and relax; and at other times to reſolve diſeaſes, as far as this can be done.

I knew a phyſician of eminence, who was accuſtom'd to uſe the filings of ſteel, mix'd into a pillular maſs with aloes, ammoniacum, and the concreted juice of ſuccory; adding moreover, when he thought the force of the medicine needed to be increas'd, a little dittany of crete, myrrh, and ſaffron: and of the pills made of this maſs, he, in general, gave two before a ſparing ſupper; but in the morning he gave broth, medicated with herbs, and roots, that might have the power of ſoftening and opening: and by theſe remedies he

he ſaid he always ſaw the wiſh'd-for effect; provided a proper regimen of living was obſerv'd at the ſame time.

There is no doubt but this phyſician; whoſe remedies I have taken notice of, not becauſe they are not in the number of the moſt common, but becauſe ſome are endow'd with different virtues from thoſe of others; might often bring about what he had undertaken; yet he would better have effected his intention, if it had been in his power to know, what it was neceſſary to do in the caſes of particular women.

For one remedy alone, if more ſuitable than the others, has the deſir'd effect ſooner, and more to the purpoſe.

Thus I likewiſe know another phyſician, who, when he ſees that there is room for aloetics, gives every day nothing more than a few grains of aloes, wrap'd up in any thing that can obtund the ſenſation of bitterneſs; and ſays that with theſe alone he more ſucceſsfully recalls the menſes, than by giving many more grains, or other remedies at the ſame time with them.

And in regard to a proper method of living, which, as I have ſaid, is not to be neglected; this is ſo much the more certain, as it is more evident, that the menſtrual purgation is very much diminiſh'd, and ſometimes ſuppreſs'd, by errors in the diet, exerciſe, and the like.

Thus, to illuſtrate the modern errors of ſome women, by an ancient example; Galen (*b*) has deliver'd down in his writings that, at Rome in his time, "it had happen'd that, as women in common drank the coldeſt water "from diſſolv'd ſnow, they either had no menſtrual purgations at all, or at "leaſt had them only in a ſmall degree."

6. But to return to thoſe remedies which excite the menſes; it ſometimes happens that there is no room for them, either at preſent, or in future; as, for inſtance, when the uterus is affected with a diſorder of ſuch a kind, that it cannot be remov'd.

Let us take an example of this kind from the very experienc'd Benevoli (*c*).

He diſcharg'd, in four virgins, by means of chirurgical remedies, the menſtrual blood which had been retain'd in the cavity of the uterus. The three firſt of them had blood diſcharg'd from the uterus, every month afterwards, according to the ordinary courſe of nature.

But the fourth had no diſcharge of the kind, even eight or ten years after; all the endeavours of phyſicians to procure them being in vain. Why ſo? Without doubt becauſe this laſt had not had the blood confin'd, for only a ſhort ſpace of time as the others had, but for the whole ſpace of three years; ſo as to be now increas'd to the quantity of two and thirty pounds, and to have much purulent matter mix'd with it.

It was probable therefore that the internal ſurface of the cavity of the uterus; being injur'd, and cover'd over with a cicatrix; had no longer the orifices open, by which the blood is, at ſtated times, diſcharg'd.

What, then, can we expect, in this, or any other ſimilar caſe, from ſuch remedies as provoke theſe diſcharges, but to add diſorder to diſorder? Let

(*b*) L. de venæ ſect. adverſ. Eraſiſtratæos c. 3. (*c*) Oſſervaz. 1.

ſuch

ſuch women as theſe uſe a ſparing diet, and loſe blood, by venæ-ſection in the arm, when there is occaſion.

7. But now, as I have enter'd into a diſcourſe, which I know to be very pleaſing to you, relating to the methods of curing, by medicine, ſuppreſſions, or obſtructions, of the menſtrual blood; before I go on the anatomical hiſtories of the contrary diſorder, I will take the trouble to ſubjoin the method to which that induſtrious, and experienc'd man, Zanichelli, truſted greatly in counteracting this ſecond diſeaſe.

He order'd ſnails, of that ſmall and whitiſh kind, which are found upon the carduus ſtellatus, to be bruis'd in a mortar, together with their ſhells; adding a little quantity of the conſerve of violets as it is call'd; after which they were hung up in a linen cloth, and the deſcending liquor receiv'd even by the help of compreſſion.

Of this liquor, when freſh-made, he ordered three ounces to be drunk every morning; and the ſame quantity at noon before dinner; and in an evening likewiſe before ſupper; when he ſuppos'd this too great diſcharge of blood, from the uterus, to proceed from that fluid being in a diſſolv'd ſtate; and impregnated with irritating particles.

And he affirm'd that this liquor had anſwer'd ſo well with him; and had produc'd ſo good effects; that he had even transferr'd it to the reſtraining of bloody diſcharges from the cheſt, if theſe happen'd from the ſame cauſes; nor would he commit this ſecret to me, on any other condition, than upon promiſing that I would reveal it to no perſon, as long as he was living; and this I have perform'd.

The following relation I alſo receiv'd from him: a woman having labour'd ſeven years under an uterine hæmorrhage, and all other remedies being in vain; ſhe was perfectly and happily cur'd by him, by means of giving the juice of lemons, and an equal weight of ſpirit of ſalt. And he had been induc'd to give theſe remedies, becauſe he had conjectur'd that there was a kind of ſcorbutic ſtate of blood in this woman; and becauſe he had before experienc'd how much it had been of advantage to others, to hold this liquor in their mouths, when it was conſiderably eroded by the ſcurvy.

From theſe caſes then; which I relate to you, juſt as he related them to me; it appears that in this diſeaſe, as well as in others, the conjecture of cauſes is of great importance: nor can the ſame remedy be proper for all.

But ſometimes there is no room for any remedy, except in the beginning; as you will underſtand from that hiſtory, which I ſhall here annex, from Valſalva.

8. A woman, of one and fifty years of age, had begun, five or ſix years before, to be troubled with a conſiderable profluvium of blood from the genitals: ſo that coagula of blood were diſcharg'd which weigh'd half a pound; other leſſer coagula following them.

A ſerous colluvies was alſo diſcharg'd ſometimes, and, at others, a humour like water in which freſh meat had been waſh'd.

If this flux was at any time ſuppreſs'd, ſhe was troubled greatly, above other ſymptoms, with a violent pain, and ſenſe of weight in the hypogaſtrium; till ſhe was reliev'd by the returning flux.

To theſe diſorders was ſometimes added a difficulty of making water; which fluid was at length diſcharg'd, after ſome conſiderable efforts, together with a fœtid blood, and putrid filaments.

Moreover, the woman was ſeiz'd, on both ſides, with an iſchiadic pain; which was ſo raging, in the night time in particular, that ſhe could ſcarcely get a ſhort ſleep. Then hyſterical convulſions attack'd her with ſo much violence, that ſhe ſeem'd, more than once, to be at the point of death.

To theſe ſucceeded a tumour of the whole belly, with a very great dryneſs of the fauces, a frequent eructation of flatus, and an averſion to food for this reaſon; becauſe even when ſhe had taken a little, a tenſion was immediately perceiv'd at the region of the ſtomach, which gave her great uneaſineſs.

Theſe ſymptoms, and vomitings, never left the woman even when the other diſagreeable ſymptoms were at length appeas'd. And indeed about two months before her death, the vomiting, which us'd to trouble her but ſeldom, became frequent; but in ſuch a manner at firſt, as to oblige her to throw up nothing but eggs, which were her uſual food; the other things, that ſhe took with them, being perfectly retain'd; and after this ſo, that, for the laſt twenty days, ſhe ſcarcely retain'd any thing of aliment that ſhe took; let it be what kind ſoever: wherefore her ſtrength decreaſing every day, ſhe departed this life.

In her carcaſe; which was ſo emaciated, that even the muſcles were almoſt without fleſh, as it were; ſcarcely any traces of blood remain'd.

The whole belly was fill'd with a ſalt ſerum, in which ſome portions of the omentum, and a great number of filaments of other kinds, were floating. The internal ſurface of the peritonæum every where ſhow'd little bodies, that bore a conſiderable reſemblance to the indurated glands of the pancreas. The ſtomach was ſmall and univerſally contracted.

The kidnies, as far as relates to their ſubſtance, were ſound. But the right contain'd very ſmall calculi, of different forms; none of which were in the left. Both the ureters contain'd urine; the left a little only: but the right being dilated to the thickneſs of my little finger, was univerſally full of urine.

Finally, there was a ſordid and fœtid ulcer in the collum uteri; though the uterus was, in the reſt of its parts, in a natural ſtate.

9. Whether the ulcer was the effect of the profluvium of very acrid blood, or whether it was the cauſe of it, from the very beginning, by corroding ſome of the more conſiderable veſſels; the diſorders that were afterwards added to the ulcer, and profluvium, may be eaſily accounted for from the nerves being drawn into conſent, by reaſon of the ſituation of the ulcer; and from the blood, by reaſon of the great and frequent loſs thereof, being ill repair'd, and therefore render'd ſerous.

For from the one would ariſe pains, hyſteric convulſions, and vomitings; and from the other, or rather from both the cauſes when join'd together, an aſcites; the veſſels, for inſtance, being frequently conſtricted by the convulſion, and the blood for that reaſon ſlowly circulated through them; and the ſerum, with which the blood abounded, being more eaſily effus'd.

But

But the difficulty of making water, and the diſcharge thereof not till after many attempts, we may account for, from the pain in the neighbouring ulcerated part, and the ſtate of that part; the retention of urine in the uterus, and the dilatation of the right in particular, from one of thoſe ſtones which had been in the kidney of the ſame ſide, and perhaps a pretty large one, having fallen into it, and been confin'd there; and yet, among ſo many other pains, and uneaſineſſes, not obſerv'd when diſcharg'd, nor taken notice of afterwards in the urine, which was foul with the ſame kind of putrid and bloody ſordes, that cover'd the whole pudendum.

10. If after the obſervations of Valſalva you alſo deſire to have mine; read over again what I have deſcrib'd *(d)*, in the uterus of thoſe women who had died with their menſtrua either diminiſh'd, or flowing in their full vigour. For I will not repeat them here.

But I will rather paſs over from the laſt propos'd obſervation; of a profluvium not only of blood, but of a ſerous colluvies alſo; to the fluor muliebris, which was a ſecond ſubject of this letter.

To which diſeaſe although I have no obſervations of Valſalva's peculiarly relative; yet there are ſo many of mine remaining; eſpecially if I ſhould be willing to purſue the beginnings of ſome of the cauſes of this fluor, obſerv'd by diſſection; that I am under a greater danger of exceeding, unleſs I am cautious, than of not filling up, the bounds which I generally preſcribe to my letters.

11. The ſources of the fluor muliebris are, for the moſt part, in the uterus. For that which we read in the hiſtory of the Royal Academy of Sciences at Paris *(e)*; that from a large abſceſs of one of the ovaria, with which the tube communicated, a purulent ſerum had flow'd down into this tube; from thence into the uterus; and at length from the uterus into the vagina; is rare.

But the uterus itſelf is the ſource, either of a various-colour'd, a ſimple, or a purulent ſerum. And the latter flows from the uterus, or the vagina, when ulcerated.

Yet the former is generally from the uterus, the internal membrane of which, like that of the noſtrils in a coryza, may be affected with a kind of rheum; or the mouths of the ſmall veſſels may ſo far contract themſelves, after having diſcharg'd the menſtrual blood, as to prevent any farther diſcharge of this fluid, indeed, but not of the ſerum; in regard to which, as it is ting'd with a different colour, in different perſons, ſo it does not make a fluor of the ſame colour in all.

And theſe things I have hinted at in the Adverſaria *(f)*.

Of this rheum of the uterus, eminent phyſicians have expreſsly ſpoken, before the more modern; and among theſe Gulielmus Ballonius *(g)*, who call'd it a "catarrh;" and Lælius a Fonte *(h)*, who call'd it "a diſtillation "of the uterus," and ſaid that it was "a kind of rheumatiſm; and before them Galen *(i)* formerly, who has taught us, that theſe fluors are produc'd "by rheums of the uterus."

(d) Ep. 19. n. 11. Ep. 21. n. 29. Ep. 31. n. 16. Ep. 38. n. 34. Ep. 45. n. 21.
(e) A. 1700. obſ. anat. 5.
(f) IV. Animad. 27.
(g) L. 1. Conſil. Med. 56. ſub. fin.
(h) Conſult. Med. 117.
(i) De Symptom. Cauſ. l. 3. c. 4.

I, however, will firſt propoſe the obſervations, that are to be refer'd to thoſe which are brought on in the firſt, or ſecond method; or a third which I ſhall add (*k*); and conſiſt of a ſimple ſerum: and then I ſhall give the obſervations that relate to fluors, which have their origin from a purulent ſerum.

12. A virgin about ſixteen years of age was brought into the hoſpital of St. Mary de Morte at Bologna, after having been afflicted for fifteen days with a fever at home. She was no ſooner brought in, but ſhe vomited worms; one of which was of a red colour, longer than a ſpan, and almoſt of the thickneſs of a common writing quill.

Theſe animals ſhe had alſo brought up at home; the diſcharge being preceded by a guſhing of tears, but not by an itching of the noſtrils. She complain'd of a pain, the ſeat of which ſhe pointed out, by applying her hand to the left hypochondrium, and the neighbourhood thereof; in ſuch a manner that it could not well be aſcertain'd, whether ſhe meant to mark out her belly or her breaſt.

Her pulſe was frequent, ſmall, and weak. She often ſlept in the daytime. In this manner ſhe paſs'd three days. At which time, beſides the other ſymptoms, the women who were about her, obſerv'd that there was a fluor albus alſo.

On the fourth day ſhe ſeem'd to be frequently delirious. The pulſe was become weaker, and ſmaller. The tongue was red and dry. She complain'd of a pain in the head.

On the fifth day ſhe was very prone to ſleep; but on the following night ſhe cried out very much.

On the ſixth and ſeventh day the ſame ſymptoms continu'd: and ſhe then diſcharg'd her urine, which ſhe had always diſcharg'd pretty freely, and in a large quantity, involuntarily, and in a very great quantity.

On the eighth day after her firſt coming into the hoſpital, being overcome with ſleep, ſhe died.

We diſſected her body on the ſecond day after her death; which day was the thirtieth of March in the year 1706.

When the cranium was open'd; for from thence I chooſe to begin the narration of thoſe things which we ſaw; whatever is contain'd in the meninges was of a very ſoft nature. Betwixt the pia mater, and the whole baſis of the medulla oblongata, was a conſiderable quantity of water: and within the ventricles water was alſo found, which was of a reddiſh colour.

The *plexus choroides* were of a pale colour: but the veſſels which crept through the whole pia mater, and thoſe alſo that went through the ſurfaces of the lateral ventricles, were turgid with blood: and from the ſame ventricles, theſe veſſels were very eaſily pull'd away, together with that membrane; which was follow'd by a lamella of the white, or cineritious ſubſtance, that compos'd their parietes: and this lamella was, in every part, nearly of an equal thickneſs.

The thorax had both lobes of the lungs, but eſpecially the left, adhering

(*k*) Infra, n. 19. & ſeq.

to

to the pleura in ſome places; both at the middle and at the lower part; and that by means of membranes interpos'd.

Looking upon the ſurface of the right lobe, at the upper part, and ſeeing, through the inveſting membrane, certain globular bodies lying very thick, and not larger than millet-ſeeds, I cut into theſe lungs which were in other reſpects ſound; and found the ſame globular bodies lying every where very thickly indeed, but disjoin'd from each other by intervals; being hard in their ſubſtance, and, to appearance, of a tartareous nature as it were.

In the heart was nothing worthy of remark; although, in the right auricle, a polypous cortex of grumous blood cover'd the ſide thereof.

In opening the abdomen; which had appear'd livid, externally, towards the ilia; we had ſeen the liver to be ting'd, at the middle of the lower convex ſurface, with a ſpot of no very large ſize, comprehended in the circumference of a circle; being of a cineritious colour inclining to white: which colour deſcended into the ſubſtance of the viſcus. In the veſicle the bile was inclin'd to a black colour.

The flat ſurface of the ſpleen was alſo of a livid colour inclining to blackneſs; tho' this blackneſs was ſcarcely produc'd farther than the coat of it. The pancreas ſeem'd to be ſomewhat hard. The ſtomach, as far as I could judge externally, was ſound. We perceiv'd round worms to be harbouring themſelves in the ſmall inteſtines, by feeling them with our hands.

Then turning our eyes to the appearances in the pelvis, we obſerv'd a ſmall quantity of water there. But upon taking out the bladder (which was diſtended with urine) together with the annexed genitals; we ſaw, on the internal ſurface of this cavity, the ſmall veſſels tumid with blood for a conſiderable tract; ſo that beginning above the orifices of the ureters, through which they were continu'd, they exhibited this appearance quite to the beginning of the urethra: and indeed betwixt theſe veſſels, in ſome places, we ſaw drops of extravaſated blood through the internal coat; and in the urethra itſelf, beneath the internal membrane, which was ſprinkled with its ſmall veſſels, were others much larger than theſe, and very much diſtended with blood.

The left of the nymphæ, which was broader than that on the right ſide, was likewiſe longer than that, to ſuch a degree, as to reach to the frænum of the labia; having a water contain'd within its ſubſtance.

Moreover, the orifice of the vagina, and the hymen, were of a red colour degenerating into blackneſs; and ſmelt very ſtrong: and the neighbouring part of the vagina, being here and there of a livid colour inclining to yellow, gave pretty conſiderable marks of a gangrene.

Turning from theſe lower parts to the upper, I obſerv'd the wider extremity of the left tube to be drawn downwards by an hydatid; equal in ſize to a large grape; which had been form'd in the contiguous part of the ala veſpertilionis.

But that a larger hydatid than this, had been pendulous from the membrane of one of the teſtes, I perceiv'd from a roundiſh corpuſcle; which, although it was contracted into itſelf, yet even then preſerv'd a ſmall cavity betwixt the thicken'd coats, and hung from this teſtis.

And in this teſtis were two roundiſh bodies buried; the one bigger than the other, but both of them made up of a black coat, and of a kind of coagulum

agulum of blood ſhut up therein; which, however, was of a red colour. The other teſtis likewiſe contain'd two unequal cells, form'd of a black coat, bu empty.

The uterus was ſmall, and conſiſted of parietes of an inconſiderable thickneſs. The upper part of its fundus was univerſally red with conſpicuous blood-veſſels, on its internal ſurface. When I had wip'd off the mucus, which we ſee there in a natural ſtate, from the oſculum uteri, and the neighbouring part of the cervix; by compreſſing the inferior part of the fundus, the cervix, and the corona of the os uteri, I ſaw a thickiſh, and pretty white, matter proceed from all theſe places; and that in a regular manner; which pretty clearly ſhow'd from whence the fluor albus had been diſcharg'd.

13. The other parts of this hiſtory you will, of yourſelf, refer to the claſſes whereto they belong; for I am not willing to ſpeak over again here, of the diſorders whereof I have ſufficiently treated already.

It will be enough for us to attend to the laſt part: nor would I have you believe, becauſe I have ſaid that a white and thickiſh matter was preſs'd out, that this was any thing elſe but ſerum; which, having loſt its other, and more watry, particles, by ſtagnation, and by being taken back into the blood, the remaining particles become endow'd with that colour, and thickneſs, which we ſee in the evaporation of the ſerum.

14. A virgin, of fourteen years of age, having died in the hoſpital at Padua, about the beginning of February in the year 1719; after labouring under pains of the belly; I order'd the genital parts to be brought to me, for the ſake of anatomical reſearches; and as I found ſome morbid appearances therein, contrary to my expectation, I will relate them to you; after having firſt pointed out two things that were obſerv'd in the belly, while theſe parts were taken out.

The viſcera of that cavity were here and there unequal with tubercles. The omentum was thicken'd, and adher'd to the fundus uteri. This laſt-mention'd part was ſtill very ſmall; being ſuch a one, for inſtance, as was proper for a girl, whom, if you conſider'd the pubes as yet ſcarcely furniſh'd with any hairs, you could ſcarcely ſuppoſe to be at the age of puberty.

When I had cut into it, I found the cavity full of a humid matter, of a white colour; but inclining to a yellow and greeniſh hue. And this being wip'd off, the internal ſurface of the uterus appear'd to be growing out, in ſeveral places, into ſmall whitiſh tubercles.

Moreover, there was no protuberating corona to the os uteri: and this orifice, and the neighbouring part of the vagina, and the lower part of it likewiſe, and the hymen, were occupied by a phlogoſis; ſo as to make it natural to conjecture, that theſe inferior parts had been irritated, by the flowing down of the more fluid, and acrid part, of that matter; while the more thick part, ſtagnating in the uterus of the virgin, when in a recumbent poſture, adher'd to thoſe ſmall tubercles, which either this matter had produc'd, or from which, perhaps, this matter had proceeded.

15. Call to mind another young woman, the internal ſurface of whoſe fundus uteri I likewiſe have deſcrib'd (*l*), as unequal with certain tubercles, like warts; and you will readily conceive that this ſurface is prone to diſorders of

(*l*) Epiſt. 45. n. 21.

that

that kind: and the ſame will be confirm'd by the excreſcences of which I ſhall ſpeak hereafter.

But do not be ſurpriz'd, that there ſhould be a fluor muliebris in a girl of this age. For in many it has begun about the firſt dawnings of puberty; and in ſome even much ſooner, though rarely; in the ſame manner as the menſtrual flux is obſerv'd rarely, but in fact much ſooner.

Read in Terraneus (*m*); to take no notice of others; the obſervation taken from a girl of nine years of age, of a noble family, who was cur'd of a fluor muliebris; and even an obſervation of another, who being younger than the laſt by two years, was affected with the ſame diſeaſe, and "diſcharg'd, in "great quantity, a humour like whey not yet clarified: and this with ſome "ardor, and pruritus."

16. As I was demonſtrating ſome of the parts of an old woman, who had died in this hoſpital of I know not what diſeaſe, before the middle of December in the year 1744, to the ſtudents therein; I happen'd to light on ſome appearances which were preternatural.

The valvulæ tricuſpides of the heart were pretty hard here and there; nor were the ſemilunares without ſome hardneſs. And indeed the great artery had bony ſcales internally, in ſeveral parts.

To the teſtes ſome hydatids adher'd. When I had brought the os uteri to view, by laying open the vagina; the border of it appear'd to be divided into two parts as it were, from the anterior to the poſterior view.

That is to ſay, from each ſide of that border, a ſmall excreſcence was protuberant; in which, as in the neighbouring parietes of the cervix alſo, lay hid ſome cells, or if you pleaſe, veſicles; and among theſe, one pretty large; all of them being full of that very mucus, which is naturally wont to be found at the orifice of the uterus; except that this was of a yellow colour.

While I went on in cutting into the cervix, and proceeded upwards, behold from the very fundus uteri ſuddenly iſſued a yellowiſh ſerum; and this in ſuch a quantity, that you could ſcarcely have held it in a ſpoon: but how this ſerum was retain'd in the fundus, even when the uterus was taken out, and roll'd here and there, it was not very eaſy to conjecture.

For in another woman, when the ſame thing occur'd, I could ſuppoſe, that the internal faſciculi of the cervix; which I ſaw to be thicken'd, and plac'd in a confus'd order; had obſtructed the deflux of the ſerum.

But this circumſtance did not take place here: and the upper part of the fundus, almoſt univerſally, eſpecially on its poſterior part, being ting'd of a filthy colour internally, was, externally, of a black colour inclining to red; yet this penetrated but to a little depth if you cut it, and was without any ill ſmell.

17. To this claſs you may alſo refer the obſervation on the woman, which I have given you in the forty-fifth letter (*n*). For in that the cavity both of the fundus, and of the continued cervix, was full of mucus of a thinner nature than that which generally is at the orifice; and even was in this woman.

That is to ſay, as from the fundus uteri; in the virgin, and old woman, whom I have deſcrib'd; a matter of a white colour degenerating into yellow,

(*m*) De Glandulis poſt. c. 5. obſ. 2. (*n*) N. 16.

and a yellowiſh ſerum was diſcharg'd; ſo likewiſe in that woman, the thin mucus ſeems to have been diſcharg'd from the ſame place: for it did not come from the tubes, which I examin'd in all of them to no purpoſe.

But in the virgin; whom I put down in the firſt place *(o)*, for this reaſon, beauſe a fluor had really been obſerv'd in her while ſhe was living; a white matter was preſs'd out, not from the fundus uteri, but from the lower part of it; from the cervix, and from the orifice.

And from theſe inferior places, I ſuppoſe the matter, and humour, to have flow'd down in thoſe women alſo; one of whoſe hiſtories I ſhall immediately ſubjoin, and take notice of the others.

18. I examin'd the viſcera of the abdomen of a certain woman, after the middle of March in the year 1741, in the hoſpital, and that for the ſake of the anatomy of the parts: for which reaſon, I have not made any remark, in regard to the diſorder of which ſhe died. Among the natural appearances I obſerv'd the following preternatural ones.

The ſtomach extended itſelf quite to the navel. The inteſtinum duodenum was very wide. The whole of the uterus was ſo drawn to the left ſide, that it could not be drawn back into the middle with the hand, on account of the reſiſtance given thereto, by the ligamentum latum; which was much more ſhort betwixt the left ſide of the uterus and the pelvis, than betwixt the pelvis and the right ſide.

The internal ſurface of the fundus was ting'd almoſt of a bloody colour, as the corona oſculi was alſo; except that it here inclin'd more to blackneſs. Beſides, this corona was divided into two ſmall prominences as it were. From the os uteri, and from the cervix, came forth a mucus; not of the ſame kind which we generally ſee, but thick, and almoſt puriform.

19. To this claſs, in my opinion, are to be refer'd thoſe things, which, as I have written to you on other occaſions, were obſerv'd by me in other women *(p)*; and alſo in a certain virgin *(q)*. For in the ſtrumpet, I ſaw the oſculum uteri daub'd over with a certain white and thickiſh humour; not only unlike that which was in the tubes, but alſo much unlike the ſemen virile.

And in another woman, in whom the corona oſculi, and the vagina, were daub'd over with a whitiſh matter; this could not have any higher origin than from the oſculum uteri: for the matter which I obſerv'd above the oſculum, was quite of a different nature.

But in a virgin, whoſe vagina was more moiſt with a whitiſh and thickiſh humour, the diſſection of the upper parts ſhows it to have come either from the ſame corona, or even from the vagina itſelf: nor does it ſeem that it could be accounted for from any other part, in another woman of whom I ſhall write on a future occaſion *(r)*.

Moreover, in the corona, oſculum, and neighbouring cervix, that veſicles are ſometimes prominent, and ſometimes lie hid; which veſicles naturally contain nothing elſe but a limpid mucus, that may be drawn out into threads, ſuch as is ſeen to be pour'd out at thoſe places; you very well know from thoſe things which I formerly advanc'd in the Adverſaria *(s)*, and at the ſame

(o) Supra, n. 12.
(p) Epiſt. 26. n. 13. & Epiſt. 21. n. 47.
(q) Epiſt. 34. n. 33.
(r) Epiſt. 50. n. 51.
(s) I. n. 32. & IV. Animad. 39. & 40.

time confirm'd: of the fortuitous formation of which veſicles, there is no occaſion here to refute the figment of a modern anatomiſt; as it has already been refuted by others.

But what forbids us to ſuppoſe, that, as we ſee in other glands, ſo in theſe, alſo, by the force of diſeaſe, inſtead of that mucus a different matter may be ſeparated; ſometimes whitiſh, and thickiſh, and ſometimes even watery?

And indeed, when you read the writings of thoſe who had ſeen veſicles, in theſe ſituations, before me; you will find that the greater part of the obſervers, as I have ſaid in the firſt of the Adverſaria (*t*), had taken them for hydatids, from that water which they happen'd to find preternaturally contain'd in the veſicles. And that this water has been ſometimes found by me alſo, for the ſame reaſon, in thoſe veſicles; you ſufficiently learn from the fourth of the Adverſaria (*u*).

Therefore, as they naturally pour out that mucus; ſo when the ſecretion they perform is become vitiated and preternatural, they may pour out both a whitiſh and thick matter, and a watery matter.

20. But as not only in the lower part of the uterus, but even in the fundus itſelf, we have ſeen veſicles; though more rarely; having the ſame mucus in them as at the os uteri; a fluor of a watery, or thick and white matter, or finally a fluor of any other colour, may have that ſource in the fundus alſo.

And it behoves us here to confirm, by obſervations, what I ſay I have more rarely ſeen; eſpecially as theſe relate to the excreſcences of the uterus, of which it follows next in order to treat.

To the obſervation therefore, which you have had in the thirty-fourth letter (*x*); of an excreſcence that was cover'd with veſicles of this kind, near the upper part of the fundus; and to another which you will have when I treat of lameneſs (*y*); of a tubercle in the upper part of the fundus, which conſiſted of a congeries of thoſe veſicles; add theſe that follow.

21. The urinary and genital parts, of an old woman, were brought to me, when I was teaching anatomy in the college, in the month of February and the year 1740.

While I examin'd theſe parts, I obſerv'd that the trunk of the aorta was not without the beginning of bony ſcales internally; although they were very few, and appear'd like ſpots.

The fundus uteri being open'd; not only where it was neareſt to the cervix did I ſee veſicles, but a little higher, alſo, from one ſide of it, I ſaw a ſmall cluſter, as it were, of theſe veſicles hanging down; which veſicles were connected one to another by a whitiſh ſubſtance being interpos'd: from whence a ſtalk alſo was form'd, not very ſhort nor ſlender; whereby the cluſter was connected to the internal membrane of the uterus, which was ſound, and conſiſted of the ſame whitiſh ſubſtance.

22. But as theſe veſicles themſelves; except that they had formerly been torn from the membrane of the uterus, by I know not what accident; and their mucus were quite in a natural ſtate; in order to convince you from obſervations, that the mucus which they contain may ſometimes degenerate from its natural ſtate (as I have hinted above) either in colour or conſiſtence;

(*t*) N. 32. modo indicato.
(*u*) Animad. 40. indicata.
(*x*) N. 33.
(*y*) Epiſt. 56. n. 20.

firſt call to mind, that, when from the oſculum uteri, two excreſcences, as I have related a little above (z), made up of theſe veſicles were prominent, the mucus in theſe very veſicles was of a yellow colour; and then read the two next obſervations.

23. I diſſected with accuracy, after the middle of March in the year 1717, the genitals of a virgin of three and thirty years of age.

The uterus, like moſt of the other parts, preſerv'd its natural ſtate. For although the veſſels about it were very tumid, and the internal ſubſtance of it likewiſe turgid with blood; yet that theſe appearances were owing to the menſtrual flux having been at hand, when the woman died, was plain from the internal ſurface of the fundus uteri; which, when the fingers were preſs'd underneath, emitted drops of blood, whereto, when wip'd off, others ſucceeded: but this was attempted in the cervix and vagina to no purpoſe.

At the ſame time that I was making theſe experiments, and demonſtrating the event thereof to thoſe who were preſent, I obſerv'd two excreſcences; the one in the right ſide of the fundus neareſt to the neck, the other a little below, in the ſame ſide of the cervix.

Both of them were ſmall, and made up of ſimilar veſicles. But upon cutting into them, thoſe which compos'd the inferior, gave out a natural mucus; and thoſe that compos'd the ſuperior, a limpid water.

24. A woman, of ſeventy-five years of age, was ſeiz'd with an apoplexy when ſhe ſeem'd to be very well in health; and by that was carried off within three days. The abdominal viſcera were the only parts which were brought into the college, when I was teaching anatomy in February of the year 1735.

There were ſome glands of the meſentery (not only far from the annex'd inteſtines, but particularly more near, where three or four were nigh to each other, but not contiguous) which being of a natural colour and appearance, did not each of them equal the ſize of a ſmall bean: this appearance, in a woman of that age, will perhaps ſeem ſurprizing to ſome perſons, and perhaps alſo preternatural.

That the appendicula vermiformis was hollow only for a third part of its length, and ſcarcely that, I have ſufficiently ſhown in the Epiſtolæ Anatomicæ (a).

This one circumſtance I ought not to omit here; I mean that, from the corona of the oſculum uterinum, an excreſcence hung into the vagina, of the bigneſs of a very ſmall cherry; being blackiſh and tuberous on its external part: in cutting into which I found it to be nothing elſe but a congeries of veſicles, of a ſomewhat larger ſize; ſome of which contain'd that mucus whereof I have frequently ſpoken, in a natural ſtate, and ſome contain'd water.

25. You ſee that the ſame veſicles may ſecrete that mucus, when in their natural ſtate, and may alſo ſecrete different matters; and among theſe water; if they happen to be vitiated: and that either in the fundus uteri, where they are more rarely ſeen, or in the cervix, and oſculum, where they are ſeen much more frequently.

And to the corona of this oſculum; from whence I ſaw that excreſcence conſiſting of veſicles to hang; perhaps belong'd that large tumour

(z) N. 16. (a) Epiſt. 14. n. 62.

5 " fill'd

" fill'd with watry cells in ſeveral places," which Ruyſch (*b*) deſcribes as being cut out from the genitals of a woman; as it was a tumour which " had its origin from the confines of the os uteri, or about the os internum " uteri."

But the fluors, of which I have hitherto ſpoken, all conſiſt of ſimple ſerum. And ſome of theſe I have known to be got rid of by different methods; and that not very ſeldom; or at leaſt to be vaſtly diminiſh'd: and I have known one, which from white became yellow, and obſtinate to be remov'd, carried off, by a drink in which the herb ſopewort was freſh boil'd, being given for many days; together with the uſe of white amber alſo, and the drinking of wine in which a ſmall quantity of ſarſaparilla root had been infus'd.

We muſt now go on to thoſe fluors, in which a purulent ſerum is diſcharg'd. In regard to which, if, as is generally the caſe, they are the effect of an ulcerated cancer of the uterus, they are incurable even from the beginning.

And indeed I remember that when I, and a ſenior phyſician of no inconſiderable fame, conſulted together on account of a noble young matron who was his patient, and afflicted with this diſorder; with which ſhe had been ſeiz'd no more than two months before, tho' it was now exceedingly violent; the ſenior phyſician made this concluſion to his ſpeech: that the diſorder indeed was violent; but yet as it was recent ſomething might be expected from remedies: yet I immediately ſpoke to this effect, after ſaying ſomething of the nature of the diſorder, that the very circumſtance which left him ſome hope, intirely took it away from me: for a diſorder of this kind, which had made ſuch a very great progreſs in ſo ſhort a time, ſhow'd by that very circumſtance, if it were not certain that it was incurable even from other ſymptoms, that it would prove unconquerable by all kinds of remedies.

Nor was I deceiv'd in my opinion; the woman being ſoon after carried off by her very ſevere and excruciating pains, by continual watchings, and a continual deflux of a ſanies, ſerous in its conſiſtence, and brown in its colour; and of a very intolerable ſmell; and by other ſevere ſymptoms, which Aetius (*c*) formerly deliver'd at large from Archigenes: and before him Paulus (*d*).

In copying of whoſe prolix paſſage upon theſe ſymptoms, Frederic Hoffmann (*e*) forgetting, which is not to be wonder'd at in thoſe who write a great many things, that it was from Aretæus, has ſaid in the ſecond book and the ſixty-ſeventh chapter; which chapter is no where in all Aretæus: who gives you the marks of this diſorder, in the eleventh chapter of the ſecond book, of the ſigns and cauſes of chronic diſeaſes.

Hoffmann ſays in the ſame place, " that the more modern phyſicians have " not much obſerv'd this affection of the uterus; but that he had obſerv'd " it ſometimes, juſt in the ſame manner and with the ſame ſymptoms as " are produc'd in that paſſage, which I have refer'd to in Paulus.

Whether they have obſerv'd it little, or not, you will judge by their writings. To me however, it has been frequently ſeen; more frequently than I could wiſh; not only becauſe it is incurable, but becauſe in ſome patients it

(*b*) Theſ. Anat. 8. n. 102.
(*c*) Tetrab. 4. ſerm. 4. c. 94.
(*d*) De re med. l. 3. c. 67.
(*e*) Medic. Rational. tom. 4. p. 1. ſ. 2. c. 10. in Theſ. Patholog. §. 8.

ſcarcely admits of any alleviation; in whom I ſuppoſe it affected the vagina moſt: for theſe women having a few ounces of new milk, in which a little of any compoſition of opium was diſſolv'd, thrown up into the inteſtinum rectum in the evening, obtain'd a very ſhort, indeed, but a very deſirable repoſe.

Yet there was one of theſe to whom it was of no ſervice in the beginning of the night, but the next morning; and that conſtantly. If to the ſame patient opium were given, ſhe obtain'd a remiſſion of her pains indeed, and got ſome ſleep; but this was ſucceeded by ſuch a ſtupor of the ſenſes, that the patient greatly complain'd thereof.

The ſymptoms however, in reſpect to the fluor, which we chiefly pay regard to here, are ſometimes in part various. Read the obſervation of de Graaf (*f*) join'd with a diſſection, which I am very much ſurpriz'd to find omitted in this thirty-ſixth ſection of the Sepulchretum.

You will ſee that a very acrid matter; but of the colour of the white of an egg, when "coagulated," had deſcended into the vagina from the uterus, which was, "every where, either ulcerated or ſcirrhous."

Or read over again the hiſtory that I have deſcrib'd to you in the thirty-ninth letter (*g*). You will find that a very large ſcirrhus, in the cervix uteri, and almoſt the whole vagina, was ulcerated in ſuch a manner, that, from certain parts of the ulcer, a white matter might flow down; but that no diſagreeable ſmell was perceiv'd from ulcers of that kind, even the largeſt and moſt deep.

26. I ſhould gladly have defer'd that hiſtory, wherein we treat of theſe things which I juſt now took notice of, after a profluvium of blood; the fluor muliebris, and the marks of an ulcerated cancer in the uterus; if I had not been under a neceſſity of producing it among thoſe of internal tumours of the belly.

Other obſervations of mine, of eroſions in the genitals of women, would have place here alſo; if it were not more proper to reſerve them to another occaſion (*h*).

In the mean while, I will point out to you ſome obſervations of others, which, if you pleaſe you may add to the Sepulchretum. In reading over theſe, you will find, that, in all of them, after uterine hæmorrhages, and purulent profluvia, ſuppurated tumours, or ulcers, were found in the uterus.

Thus Maximilianus Preuſſius (*i*), among the cyſts which fill'd the uterus of his wife, deſcribes ſuch as "reſembled abſceſſes fill'd with a purulent "ichor, of a green colour mix'd with white, and extremely fœtid;" and in them one which "had, in ſeveral places, perforated the urinary bladder, "that was coaleſc'd into one viſcus, as it were, with the uterus all round "about; and, together with the urine, had frequently diſcharg'd a ſimilar "pus from the body;" wherefore the pus did not flow out of the uterus only, but from both places, though generated in the uterus.

So Jo. Maurice Hoffmann (*k*) ſaw "the internal cavity of the uterus "mark'd out into a great number of ſmall caverns, and loculi;" after wiping off the pus wherewith the cavity was turgid. So Godofredus Klaunigius (*l*), in particular found "a cancerous ulcer" of the ſame kind, "in the collum

(*f*) De Mulier. Organ. c. 9.
(*g*) N. 33.
(*h*) Epiſt. 52. n. 2. & 6.
(*i*) Eph. n. c. dec. 3. a. 5. & 6. obſ. 126.
(*k*) Earund. cent. 8. obſ. 27.
(*l*) Earund. cent. 3. obſ. 65.

"uteri;

" uteri; ſo that this very collum ſhow'd nothing of its own ſubſtance re-
" maining, but the external coat or membrane: the other parts being in-
" tirely conſum'd."

This ſo very conſiderable conſumption of the ſubſtance of the uterus, within only a ſhort time, has often induc'd me to wiſh, that, in the obſervation which I took notice of in the foregoing letter (*m*), wherein " the uterus " was very ſmall like a pigeon's egg, and in a manner corrugated;" in a woman of about eight and thirty years of age; to wiſh, I ſay, that the ſame had been diſſected.

For as the patient " had labour'd, through the whole of her life, under a " fluor albus;" it is, perhaps, not very contrary to probability, to ſuppoſe that the ſubſtance of the uterus had been conſum'd gradually, though not from an ulcer of that kind; but that the ſubſtance had been ſo injur'd nevertheleſs, and ſo waſted away, that not ſo much the uterus itſelf, as the external membrane of it, being corrugated, and ſubſiding, it was at length reduc'd to that ſtate of ſmallneſs.

27. After having refer'd you to theſe obſervations, I muſt now do what I promis'd you: that is, I muſt go on to conſider the ſmall beginnings of the cauſes of great diſorders of this kind; and conſequently of the cauſes of the fluor; I mean excreſcences of the uterus, or tumours, that I have obſerv'd by means of diſſection: not all of them however, but thoſe which I ſuppoſe to relate moſt to the preſent ſubject. For they are either external or internal.

Obſervations of the firſt kind, which do not ſo much relate to the ſubject in queſtion, I have taken notice of, briefly, in the thirty-ninth letter (*n*). But I ſhall here make mention of the internal ones, which are deſcrib'd elſewhere; and ſhall add ſome, for which I ſhould not eaſily find another place.

Thoſe tumours however, which grow within the very ſubſtance of the parietes uteri itſelf; one of which I have deſcrib'd in the forty-fourth letter (*o*); will be here omitted for this reaſon; that they do not always reach to the cavity of the uterus, though they are greatly increas'd: as appears from that very large tumour, whereof you will read in the preceding twenty-third ſection of the Sepulchretum (*p*).

To the internal then belong; beſides thoſe minute tubercles which I deſcrib'd above (*q*), and thoſe ſmall verrucæ which I took notice of on that occaſion (*r*); certain ſmall excreſcences, of different forms, obſerv'd in ſeveral uteri (*s*), one in each; and others alſo, very low and ſmooth; but more in number, and of a conſiderable circumference (*t*); and in like manner out of three, two at leaſt, which were affix'd to the uterus, by a peduncle of no ſlender ſize; and were leſs hard in their ſubſtance than the uterus itſelf; the ſubſtance, both internally and externally, being ſo full of blood as to be quite black (*u*): finally, a ſcirrhous tubercle in the corona of the os uteri (*x*).

But theſe I have written of to you already. Now let us add the others.

(*m*) N. 21.
(*n*) N. 36.
(*o*) N. 23.
(*p*) Obſ. 11. §. 2.
(*q*) N. 14.
(*r*) N. 15.
(*s*) Epiſt. 12. n. 2. & ep. 23. n. 11; & ep. 45. n. 16.
(*t*) Epiſt. ead. n. 17.
(*u*) Ibid. n. 24.
(*x*) Ibid. n. 23.

Yet.

Yet if you deſire to know of other appearances, of the ſame kind, ſeen by other perſons, you will find, among the reſt obſerv'd by Gvolfg. Hannib. Langius (*y*); after the uterus had been greatly injur'd by a midwife; a certain ſcirrhous tubercle, ſtopping up the orifice thereof to ſuch a degree, that there was no paſſage for the diſcharge of flatus; nor any admiſſion for the probe: and you will alſo find, that, by the younger du Verney (*z*), a glandular body of the bigneſs of a nutmeg was found within the uterus of a dropſical virgin.

Others I purpoſely paſs over: and immediately go on to my obſervations that ſtill remain.

28. A woman of a middle age, had died in the hoſpital of St. Mary de Morte at Bologna, of a diſorder of the thorax, in the latter end of April of the year 1706. As I examin'd the viſcera of the belly in this woman, I obſerv'd the following preternatural appearances in the genitals.

The lower part of the vagina, where it lay neareſt to the orifice of the urethra, retain'd ſome traces of an ulcer: and theſe were ſtill more manifeſt in one of the labia pudendi. Theſe appearances gave me a ſuſpicion of a lues venerea having preceded, as an excreſcence at the anus alſo did; which conſiſted of a kind of white ſubſtance.

Turning my eyes from thence to the ovaria, and tubes, I ſaw the former to be of a whitiſh colour, and corrugated; the ſurface being hollow'd out, in ſome places, with furrows drawn in a ſerpentine form.

When I cut into them, I found them to be ſomewhat hard: and in one of them was an empty cell, which was comprehended in two coats; the one internal and black, the other external and cineritious: in the other, beſides ſmaller veſicles full of moiſture, were two pretty large cells, in an empty ſtate, one of which had a coat that was become in part bony; but the other had a coat that was become perfectly bony, and ſo furrow'd as to reſemble ſome of the folds of the ſmall inteſtines as it were.

To one of the tubes, a corpuſcle, in its ſhape and conſiſtence ſimilar to the chryſtalline humour of a ſmall fiſh, when boil'd, adher'd externally; and to the other, a congeries of the ſame kind of bodies, though far more ſmall, adher'd. The uterus was large, and had thick parietes; but in particular the fundus.

The cavity of this viſcus was much more large tranſverſly, about the middle of its length, than it generally is; and in that part, or rather a little more poſteriorly, the anterior ſurface of the uterus on one ſide, and the poſterior ſurface, were connected together by the interpoſition of a thin membrane; but from the oppoſite ſide an excreſcence began, which being fix'd to that one place, and unconnected in other parts extended itſelf in the form of a circle, the diameter of which was ſomewhat larger than the breadth of a man's thumb.

The thickneſs of this excreſcence was inconſiderable; the ſurface being diſtinguiſh'd here and there with red ſpots: and as to the ſubſtance, it was almoſt the ſame as that of the uterus itſelf, except that ſomething of a mucous ſubſtance ſeem'd to be intermix'd with it; which made it more eaſily admit of diſtraction.

(*y*) Comm. Litter. a. 1735. hebd. 29. (*z*) Mem. de l'Acad. R. des Sc. a. 1703.

The

The cavity of the cervix, both at its beginning, and termination, was much more ſtreight than it us'd to be. But from the beginning of this cavity, and on the oppoſite ſide to the excreſcence I have deſcrib'd, hung another very ſmall excreſcence; of the ſame ſubſtance as the other; but in the whole of its ſurface of a red ſaturated colour, and of the figure of a pear hanging by its ſtalk; except that, on its anterior and poſterior ſurface, it was flat.

29. This ſecond excreſcence, by reaſon of its form, brought into my mind thoſe uterine polypi, which Ruyſch (*a*) delineated; as growing out from the lower part of the cervix, and pendulous therefrom; after that obſervation, which you will be ſurpriz'd to find not transfer'd into the Sepulchretum; when you call to mind the great quantity of acrid fluor that was join'd with theſe appearances.

And as excreſcences of this kind, juſt like polypi of the noſtrils, may become cancerous and malignant, and have a malignant ulcer join'd with them; that obſervation ſufficiently teaches and demonſtrates, that it is not without juſtice we here conſider excreſcences of the uterus, as being capable of giving origin to thoſe very bad diſorders.

And with that view I ſhall add four other examples to this; all ſeen by me when I was giving public lectures in anatomy: the firſt of which will belong to the ſame claſs with this lower, and ſmall one, and the others to that upper and larger excreſcence.

30. In the year 1728, I diſſected a woman, in whom was a peculiar venous trunk; but not very ſmall; parallel to the trunk of the vena cava on the left ſide; communicating on one hand with that trunk, where it receives the iliac vein, and on the other with the emulgent vein; which veſſel I ſhall perhaps deſcribe at another time and in a more convenient place; as I ſhall alſo ſpeak of the parts that lie neareſt to thoſe veins, among which was the trunk of the great artery, that ſhow'd ſlight beginnings of bony ſcales, on its internal ſurface; for I mean now to ſpeak of the genitals only, in which I found the following appearances.

The ovaries, or, if you pleaſe, the teſtes, were ſmall: one of them was very much contracted, and the other indeed contain'd no veſicles, and but a very few cells; the leſſer of which, except that they had nothing in them worthy of remark, were ſimilar to that larger one, which ſeem'd to comprehend, within a thick coat, of a yellowiſh colour inclining to white, a ſinus in the form of a pretty long duct, which ſent out very ſmall ramifications tranſverſly: although I was afraid, leſt the coat, which formerly, perhaps, had contain'd a ſpherical cavity, being afterwards collaps'd, and contracted into itſelf, might, by the interception of its own rugæ, have given the appearance of that duct, and of theſe ramifications.

Looking at the alæ veſpertilionum, in order to demonſtrate the nervous plexuſſes therein, in one of them I met with the ſlighteſt and moſt ſmall beginning of the plexus as it were; but in the other there was not even this.

At the oſculum uteri was a kind of prominence of a green colour. A little above, from the paries of the loweſt part of the cervix, hung, by a ſhort and

(*a*) Cent. Obſ. Anat. Chir. Fig. 6. ad obſ. 6.

whitiſh,

whitiſh ſtalk, a ſmall excreſcence ſmooth in its ſurface, and of a red colour inclining to brown; leſs oblong indeed in its figure, but, in other reſpects, very ſimilar to that ſmaller excreſcence, which was laſt deſcrib'd in the woman above.

31. A woman, of fifty years of age, or upwards, having receiv'd a wound upon her head, died on the thirtieth day after that; which was in the beginning of February in the year 1738. I could ſcarcely examine any other part but the genitals. In which I obſerv'd the following things.

The teſtes were conſiderably hard, dry, and without veſicles. Although they were not at all different from each other, in any reſpect, yet the nervous plexus was much leſs in the right ala veſpertilionis, than in the other. The fundus uteri, when open'd, ſhow'd upon its lower, and poſterior ſurface, a ſmall excreſcence, nearly of the form of a circle, depreſs'd, and, in its ſuperior part only, disjoin'd from the internal membrane of the uterus. And of this very membrane it ſeem'd to be an excreſcence, rather than of the ſubſtance of the uterus.

For cutting through this excreſcence, the ſubjected paries of the uterus, and that membrane; and comparing one with another; I found the excreſcence to be made up of the ſame more compact ſubſtance that the membrane was: beſides, I found it of the ſame ſmoothneſs externally, and of the ſame colour as that membrane; if you except only the upper edge, by which I have ſaid it was disjoin'd, for this alone was red.

32. As I was looking upon, and conſidering, theſe appearances, a ſuſpicion came into my mind, that this excreſcence, and others of the ſame kind, were, perhaps, nothing elſe but the internal membrane of the uterus, riſing up in a certain place, from a nine months adheſion of the placenta; and particularly in thoſe, from whoſe uterus it had been pull'd away with any kind of violence.

For in this manner it may be conceiv'd, why theſe excreſcences are of a circular form; and why not equally manifeſt in all women that have born children.

And I remember'd to have read in Ruyſch (*b*), that altho' the protuberances, " which are found in cows that are pregnant;" and which are " nothing but " a uterine efflorescence, that, in the time of gravidation, is rais'd up into a " tumour, in that place where the fœtus is connected to its placentulæ;" are not ſeen in women, " while they are in a ſtate of pregnancy; yet in that place " where the placenta applies itſelf to the uterus, that the internal coat of the " uterus ſometimes, alſo, raiſes itſelf up into a tumour, in ſome meaſure."

But, on the other hand, I obſerv'd that Ruyſch does not ſeem to have attended to this circumſtance, that in cows theſe protuberances exiſt from the very birth, and are only inlarg'd in pregnancy like the other parts of the uterus; nor do they vaniſh away afterwards, when the empty uterus conſtringes itſelf: whereas this ſlight tumour of the internal uterus in women (in regard to which, we ſhall conſider, on another occaſion, of what nature it is, and whether it be from that coat of the uterus) does not appear to us, before the placenta has applied itſelf to the uterus in a very cloſe manner; nor after

(*b*) Theſ. Anat. 5. in fin. Arcula 3. n. 1.

the uterus has properly contracted itſelf on excluſion of the fœtus; nor indeed does Ruyſch ſay that it then appears to him.

But I remember'd in particular, that excreſcences of the ſame form had alſo been found by me in virgin uteri; or at leaſt in the uteri of thoſe who had never born children: as in this hiſtory which I ſhall immediately ſubjoin.

33. An old woman; who had been taken into the hoſpital, on account of an ulcer of the leg; ſtaying there very contentedly, had the ſame thing happen to her, which frequently happens to others likewiſe: that is, ſhe was, in conſequence of the impure halitus, ſeiz'd with a fever; which was at firſt, as ſeem'd by the previous cold, of an intermitting kind: but ſoon after, when it could not be reſtrain'd by the Peruvian bark, it became continual and acute, and was attended with ſome delirium. The woman was therefore carried off by it.

And, in examining almoſt all the viſcera of this body, about the middle of February in the year 1736, I remark'd theſe few things which ſeem'd to be morbid.

The pia mater of the brain had its veſſels diſtended with blood, and could be very eaſily drawn out of the deep furrows, which are upon the ſurface of that viſcus.

The great artery, after going out of the heart, both above the valves, and in other places; as, for inſtance, where it ran down through the belly; ſhow'd, internally, the white beginnings of future ſmall bones.

That the uterus had never been pregnant, appear'd from the inſpection of the hymen; which though it was low, was entire; or, at leaſt, had never been lacerated. And the ſame thing was confirm'd by the internal ſtructure of the uterus, when laid open; being, in a great part of it, juſt as it is in thoſe who have not born children.

Yet the internal and poſterior ſurface of the fundus, which was tranſverſly dilated, was cover'd over, at its upper part, with an excreſcence of a circular figure: which, beginning from the right ſide itſelf, terminated at no great diſtance from the left; ſo that the diameter of it was not much leſs than that in the woman of Bologna, who was deſcrib'd above (*c*).

But it was not, like that, free and unconnected, if you except a ſmall part which belong'd to the left and lower border: the remainder of it adher'd to that ſurface of the uterus which was juſt now ſpoken of. The thickneſs of this excreſcence was inconſiderable; the ſurface of it was ſmooth, and its colour externally bloody: internally it conſiſted of a whitiſh, compact, and firm ſubſtance.

34. I examin'd the urinary parts, and the parts of generation, of a cachetic, and almoſt dropſical, woman, about the end of January in the year 1749; when I found the following appearances in particular.

The left kidney had its ſurface unequal, here and there, with many cells which were full of ſerum; or rather with middle-ſiz'd, or very ſmall, hydatids.

For although they were, in great part, buried within that viſcus, ſo that none of them reach'd to the pelvis; yet they were alſo prominent outwards:

(*c*) N. 7.

ſo that ſome of them, which had burſt aſunder, might, by pouring out their ſerum, into the cavity of the belly, add ſome new materials to the incipient aſcites.

The other kidney had none that was conſpicuous on its ſurface; for one; which was of a middle ſize, and within the ſubſtance; was contain'd betwixt the ſurface and the pelvis, without reaching to either. The urinary bladder; at leaſt at its lower part; was univerſally red, and inflam'd, from a great number of ſmall veſſels being crowded together.

But as to the genitals, a tumour of a ſpherical figure had form'd itſelf upon the uterus; the diameter of which tumour was equal to an inch and half. The greater part of the tumour was prominent on the outſide of the uterus: the leſſer part was ſo buried in the anterior paries thereof, on one ſide, as not to reach to the cavity of that viſcus.

It was univerſally hard, and internally white; the whiteneſs, however, being variegated in ſeveral places with ſpots, that were leſs white. The internal ſurface of the cervix was white, and unequally tuberous; if I may be allow'd to ſpeak thus; but that of the fundus was red, and riſing up into two ſlight prominences, neither of which was red, except on the ſurface.

35. To theſe four obſervations; which, as I ſaid, were made in the college; I chooſe to add another which I made in the hoſpital, about the middle of December in the year 1748.

36. A middle-ag'd woman had died there, who was ſaid to have labour'd under a melancholic delirium, and a ſlight fever, at her own houſe, for a long time: nor yet could we know this for certain; nor from what cauſe ſhe was, at length, at the point of death, when ſhe was brought into the hoſpital. It will be your buſineſs then to conjecture, from the preternatural appearances which I obſerv'd, in examining almoſt all the viſcera, by what diſorders ſhe was carried off.

The body had a pretty good appearance. The cerebrum; to begin with that; had no peculiar hardneſs: but I found the cerebellum to be lax. Within the cranium I no where found any water.

Nor did I obſerve any thing very conſiderable in the thorax. Even the lungs were not, in any part, connected to the pleura, by the ſlighteſt attachment. In the heart was ſcarcely any coagulated blood; and in the great veſſels none at all: but I ſaw a ſmall quantity of blood come forth from the aorta, where it begins to deſcend.

In the belly, however, were many things that I obſerv'd. And firſt, when the abdomen was laid open, blood was found in the hypogaſtrium, betwixt the muſcles; being coagulated and grumous, as if it had been the conſequence of a contuſion: the cauſe of this appearance was unknown; nor did any recent injury, in the cavity of the belly, correſpond to that place.

The ſpleen was of ſuch a length, that beginning from its uſual ſituation, it reach'd quite to the os ilium; with which very great length the other dimenſions did not agree. It was lax, and not livid, but red in great part; at leaſt on its anterior ſurface.

The gall-bladder was diſtended with a great quantity of bile. There was ſome water in the lower part of the pelvis. The bladder internally, at the

orifice of the urethra, and a little above this ſpace, was diſtinguiſh'd with ſanguiferous veſſels.

The uterus was a little inclin'd to the left ſide; and yet the orifice of its oſculum, upon laying open the vagina; which was almoſt univerſally livid, and ſmelt very ſtrong; was more on the right ſide, than this inclination ſeem'd to account for. And the cauſe of this was, that the corona of the oſculum, which was harder than is natural, was increas'd on the left ſide by a kind of tumour.

37. But of excreſcences, and internal tumours, of the uterus, enough at preſent; leſt theſe letters ſhould be increas'd to an immoderate ſize, as I have ſaid is to be fear'd.

You eaſily perceive, however, that it is not ſurprizing, if from diſorders of this kind, which are ſo frequently found, the worſt of tumours, by the addition of ſome other accidental cauſe, are ſometimes form'd; and from theſe, when ulcerated, if incurable fluors are brought on. In the next letter I ſhall treat of the remainder of womens diſorders. Farewell.

LETTER the FORTY-EIGHTH

Treats of falſe Pregnancy, Abortion, and unhappy Delivery.

IF you ſhould happen to be ſurpriz'd, that I give no more than this one letter to ſo many arguments of that kind; you will be ſtill more ſurpriz'd, when you find that no more than two, and theſe not very long ſections, that is the thirty-ſeventh, and thirty-eighth, are allow'd in the Sepulchretum; not to theſe ſubjects only, but to many others at the ſame time; among which are the origin of twins, hermaphrodites, and the marks of virginity.

Theſe ſubjects I think are not proper to be treated of here; where the intention of proſecuting the plan of the Sepulchretum requires it; leſt I ſhould treat of other things beſides the hidden cauſes of diſeaſes, inveſtigated by anatomy: and if I were to treat of them, the greater part of thoſe things which are ſaid, in the Sepulchretum, thereon, would have very little, or no weight with me.

But leſt you ſhould ſuppoſe me to ſay this without good reaſon, I will give you ſome inſtances of what I aſſert.

For what has that obſervation of Gerard Blaſius *(a)* to do with the origin of twins; I mean that in which he makes no heſitation to conſider the veſicles of the teſtes, not to ſay, probably a kind of hydatid that adher'd on the outſide of one of them, as eggs?

Or what has the ſubjoin'd appendix to do with this ſame origin? For in this; to omit other things that do not differ from the opinion of Blaſius; "the aura ſeminalis is carried through the vas deferens, or ductus brevis," that is the round ligament of the teſtes, as I ſuppoſe, quite to the teſtis itſelf; as if the females of quadrupeds were not without this ligament: "the "oviducts of hens" are ſaid to be "ſtrait and pretty lax; but in man nar- "row, and very tortuous;" as if, although they are conſiderably lax in hens, they were not, at the ſame time, ſo much the more tortuous, in proportion as they are longer than the tubes in women; that is in a proportion which admits of no compariſon.

And theſe things are added; the connexion of the tubes with the teſtes ought to be more nicely inquir'd into, leſt thoſe appearances which we call jagged edges, fimbriæ, or morſus diaboli, may be the effects of rupture; that is to ſay, leſt the tubes, having, perhaps, previouſly adher'd to the teſtes, in a natural ſtate, "ſhould have been torn away therefrom, by care- "leſſneſs, during the extraction of the teſtes;" as if the tubes conſiſted of a membrane extremely thin, and their fimbriæ were of ſuch a ſtructure, and figure, as to be capable of being produc'd in that manner: there is betwixt the cervix uteri, and the teſtis, another duct that carries the ſemen, "which "might not improperly be call'd cervicalis;" as if it were not certain that a duct of this kind was nothing more than ſome ſanguiferous veſſel: finally, not to take up too much time; through the round ligaments of the uterus, "the ſeminal matter, and other excrementitious matters alſo, that are col- "lected in the uterus, are expell'd to the groins;" as if it were not manifeſt, that theſe ligaments do not communicate with the cavity of the uterus. And thus far upon the origin and generation of twins.

And pray what relation to hermaphrodites have thoſe three diſſections *(b)*? ſince with a female pudendum, was join'd a penis which was neither furniſh'd with any urethral orifice, nor emitted urine; ſo that, even without any diſſection, it was certain that this penis was nothing more than a clitoris of a monſtrous magnitude.

Finally, in reſpect to the marks of virginity, it would have been better to ſay nothing at all than to propoſe thoſe two, or three, obſervations *(c)*, in the latter part of the thirty-eighth ſection; from which the reader in part ſcarcely knows, what is not to be reckon'd among thoſe marks, and partly believes, that even the hymen itſelf (which however is the principal of all the marks of virginity) is not to be number'd in that claſs; eſpecially as in the adjoin'd Scholium it is ſaid that the caruncles alone may be conſider'd as that principal mark, and the reader is refer'd no leſs to Pinæus the aſſerter of this opinion, than to others.

But what is my opinion on theſe points, I think I have the leſs occaſion to

(*a*) 4. in ſect. 37.
(*b*) Ibid. obſ. 6.
(*c*) Obſ. 7 & 8.

take

take any notice here, becauſe I have ſufficiently ſaid, heretofore, in the Adverſaria *(a)*, what I had obſerv'd; and what is my judgment on the ſubject of virginity appears in that reſponſe entitled *ſupra Judicio Obſtetricum de Mulieris Virginitate.*

2. And even in the thirty-eighth ſection, there are not a few things which either ought not to have been introduc'd in that place, or, if added, ought to have been entirely amended by ſome animadverſion.

Nor indeed can we make the ſame apology for theſe things, that may perhaps be made for the greater part of thoſe we have made remarks upon above; I mean that at the time they were publiſh'd, no better things had been as yet advanc'd: although even then much better things had been publiſh'd; and ſtill more ſo, at the time in which the Sepulchretum was reprinted, and increas'd.

For without doubt, there was no need of recent obſervations, that theſe things, ſome of which I ſhall point out immediately, might not be produc'd without emendation.

In the firſt obſervation, for inſtance; to omit that ſome things, in the diſſection of a certain fœtus *(e)*, are ſo propos'd, that, although they are natural appearances, they may be ſuppos'd, by the greateſt part of readers, to have been the effect of a vitiated ſtructure; who can bear *(f)* that the funiculus umbilicalis of fœtuſſes, "is wont to be generally, and in all, of the length "of ſome ells?" Or who can think it "wonderful *(g)*," that a woman, who had miſcarried ſeven times, ſhould have produc'd "all her abortive fœtuſſes "juſt of the ſame magnitude; that is nearly equal to a joint of a thumb; "though ſometimes at a longer, and ſometimes at a ſhorter, diſtance from "the time of conception," who, I ſay, can ſuppoſe this to be "wonder-"ful," unleſs any one who does not underſtand that the abortions were diſcharg'd at different times indeed, but all died at the ſame time?

For that a dead fœtus may be retain'd even many months in the uterus, and without any corruption, or bad ſmell, is ſufficiently ſhown; beſides other obſervations, and particularly thoſe that are to be met with in Ruyſch *(h)*; by that which immediately follows *(i)*.

And in the ſecond obſervation *(k)*, when a certain fœtus, whoſe egreſs had been prevented by a tumour of the paſſages, was found to have his cranium compreſs'd on one ſide; this inference is drawn from it: "from which it "clearly appears, not only that the expulſive force of the uterus has an effect "towards the protruſion of the fœtus, but alſo that the infant endeavours "to free itſelf from the confinement of its priſon:" is this deduction of a matter, which, of itſelf, is in other reſpects not falſe, clearly prov'd to you: ſince the mother is ſaid, "to have had labour pains for five or ſix days," and the infant to have given no ſigns of life after the firſt days of thoſe pains; ſo that it is by no means certain whether that compreſſion of the cranium is to be aſcrib'd to the efforts of both mother and infant, or to the efforts of the mother alone.

(d) 1. n. 39. & IV. animad. 23 & 24.
(e) §. 3.
(f) . 7.
(g) §. 9.
(h) Theſ. Max. n. 40. 158. 210.
(i) 7.
(k) 3.

But

But let what I have ſaid be ſufficient. For you yourſelf, in reading over the fourteen examples; which are produc'd in the firſt obſervation, in ſuch a manner, as if all of them related to abortion; will be at no loſs to determine whether the ſecond, which relates to mature delivery, ought to have had a place among the reſt; and ſtill leſs, whether all the obſervations that are collected under number nine relate to the preſent purpoſe; as the greater part of them, at leaſt, have no reference to the preternatural, but to the natural, ſtate of the uterus, both in gravid women, and thoſe who have lately born children.

But this is a ſubject on which you muſt expect nothing from me here. For thoſe things which I alſo have obſerv'd, in reſpect to that ſtate, more than once, and with ſome accuracy, belong to a work quite different from this.

However, though I have, with ingenuouſneſs, and in order to be of uſe to your ſtudies, made theſe ſtrictures on the ſections of the Sepulchretum I have ſpecified; I nevertheleſs very readily confeſs, that there are many things in theſe ſections, which deſerve approbation.

And the heads of theſe I ſhall follow in this letter; at the ſame time however, interpoſing, or adding others, which I ſhall ſuppoſe to be neceſſary, and to relate to the preſent ſubjects.

3. And firſt in regard to falſe pregnancy; it is too well known that phyſicians are not uncommonly deceiv'd, either in taking the true for the falſe, or the falſe for the true. But I could wiſh that certain ſigns always exiſted; for in reliance upon theſe, learned and attentive phyſicians, at leaſt, would not be in danger of falling into either of the errors.

The ſign of true pregnancy, that is the motion of the fœtus in utero, is certain, and obvious, to the hands, and ſometimes even to the eyes: and any one who has once properly perceiv'd this, by the application of his hand to the abdomen, eſpecially when cold; for by this means the motion is generally excited; will never ſuffer himſelf to be impos'd upon by flatus of the inteſtines, nor any other motion whatever; ſo peculiar is that motion, and of ſuch a nature, that it cannot be produc'd except by the body of a living fœtus.

Yet, in the firſt months we not only want this ſign; but the others alſo ſometimes; and now and then even in the laſt months, by reaſon of the weakneſs of the fœtus; or from other cauſes.

I remember that I was formerly aſk'd to go and ſee a young woman, who, from the time that a ſurgeon had taken away a cancerous tumour, as they ſaid, from her breaſt, had her belly begin to ſwell; which was now nine months. The leſs reaſon I found, upon examining her, to fear, from any of her ſymptoms, that a cancerous tumour was reviv'd in the uterus; as was then ſuppos'd; with ſo much the more time and care did I examine, with my hand, the tumid uterus.

As the uterus ſeem'd to be impregnated, but I felt no motion there; and as the preſence of her relations did not ſuffer me to aſk for cold water, to dip my hot hand in; for the weather was extremely hot; I call'd aſide the phyſician of this young woman, and although he aſſerted that he had never felt any motion in the belly, I adviſed him nevertheleſs, that notwithſtanding every

every one ſuppos'd the patient to be an untouch'd virgin, he ſhould act with caution, and circumſpection; and not to forget what had happen'd in others like her, a few years before, to the great reproach of the phyſicians who attended.

Do you deſire to know the event? This untouch'd virgin ſoon after brought forth a child. The ſign that I have ſpoken of therefore is a certain ſign when it is preſent; and yet the woman may be impregnated when it is not obſerv'd.

Another ſign I have read of as propos'd by men in other reſpects learned, and experienc'd, for a certain one; and one that occurs in all gravid women; I mean the navel protuberating, on the contrary to what happens in a dropſy, and all other tumours of the belly.

But does it never protuberate in an aſcites, though ſome perforate it, when protuberant, in order to draw off the waters? And in like manner is not the cauſe that they aſſign, of the navel being prominent in pregnancy, common to other tumours whereby the inteſtines are forc'd upwards?

But it is needleſs to make theſe and other inquiries, as they themſelves confeſs, that this ſign does not exiſt before the end of the third month; and as it ſometimes moreover happens, that utero-geſtation is join'd with a dropſy.

Not to take notice here of the matron mention'd by Platerus *(l)*, who was wont, "as often as ſhe was pregnant, to fall into a dropſy;" there are few phyſicians who have not ſeen both of them join'd together ſometimes; or who, at leaſt if they are prudent and cautious, not being ignorant of the errors of others, have doubted whether they might be join'd together.

For which reaſon I was the more ſurpriz'd ſome years ago, that a phyſician, in other reſpects learned, and a man of great experience, being in conſultation with me for an illuſtrious matron; who had come hither when labouring under an aſcites and anaſarca; ſhould have ſpoken ſo as to be ſolicitous about nothing elſe, but about immediately preſcribing the moſt effectual remedies againſt both theſe dropſies.

I, however, ſeeing that the matron had young children, and was herſelf ſtill in the prime of life; and not being able to inform myſelf, for a certainty, whether ſhe was then pregnant or not; theſe medicines, ſaid I, I univerſally approve, provided, however, that they are not begun to be made uſe of, before it is quite clear as to this circumſtance whereof I am inquiring; and in the mean while let ſome more gentle remedies, and ſuch as are ſafe on both ſides, be made uſe of; and in particular a proper method of living.

The woman was wiſe, and liſten'd to me; and after having return'd home, ſent, at a proper time, to return me thanks, and to inform me, that, having brought forth a ſon, ſhe was at the ſame time freed from both thoſe diſeaſes; and that nothing thereof remain'd but a tumour of the legs.

There are, I ſee, many likewiſe who depend upon a very ancient ſign; I mean one that is propos'd in the aphoriſms of Hippocrates *(m)*; "thoſe who "are pregnant have the os uteri compreſs'd:" a mark certainly that is not to be

(l) Obſ. l. 3. ubi de Extuberantia. *(m)* Sect. 5. Aph. 52.

deſpis'd,

deſpis'd, and is very uſeful in thoſe firſt months, in which there is no room, as I have ſaid above, for the former.

Wherefore I have made uſe of this ſign with ſucceſs, when it was in my power; but I had it in my power very ſeldom; the women of our country being, for the moſt part, repugnant to an examination of that kind. Yet I have not made uſe of it without caution, not being ignorant that there are diſorders of the uterus, wherein, as Hippocrates in part teaches (*n*), the os uteri is clos'd.

And for the ſame reaſon I did not believe it to be ſufficient, if a ſkilful examiner perceiv'd, that, to ſome conſtriction of this orifice, ſome increaſe of the corona was likewiſe added; or if, having forc'd this corona upwards with his finger, and ſoon after drawn it away gradually, while the woman was in a ſtanding poſture, he obſerv'd, on ſuffering the corona to ſlip down again, the uterus to be pretty heavy; or, finally, if he perceiv'd the ſame orifice to be inclin'd towards the poſterior parts.

For although theſe things, with the addition of the ſign of Hippocrates, certainly increaſe the force of that; yet I judg'd that there was no great dependance to be plac'd upon them; unleſs when that corona, as Galen (*o*) formerly admoniſh'd, was not harder than is natural, and all ſymptoms of diſeaſes, and affections of the uterus; in ſome of which, at leaſt, there is an inclination forwards, whereby the oſculum is turn'd backwards; were wanting.

4. That we may not, therefore, take a true pregnancy, for a falſe one, we muſt have a peculiar regard to the ſigns that are not preſent, as well as to thoſe that are; and above all, if the woman has been pregnant before, we muſt conſider whether the ſigns, from which ſhe judges herſelf to be pregnant now, are the ſame that had preceded in the beginning, at other times.

For by reaſon of this circumſtance being deſpis'd; which is ſometimes fallacious indeed, but not to be neglected for that reaſon; I have ſeen phyſicians fall into an error, as you will clearly conceive, from three obſervations at leaſt, which I chooſe to ſubjoin. All theſe obſervations relate to women of rank; the firſt to one of this city, and the others to women of my native city.

5. A fœtus had been conceiv'd ſix months and ſome days; for from that time the woman had not convers'd any more with her huſband; the mother not doubting, by reaſon of the uneaſy ſymptoms which ſhe had uſually ſuffer'd, after other conceptions, but that ſhe was really with child.

And now the uterus had begun to ſwell in the third month, when, a great quantity of blood being diſcharg'd from the hæmorrhoids, the ſwelling was conſiderably abated; ſo that it was in general ſuppos'd the woman had been deceiv'd.

Wherefore, although ſhe afterwards found her belly ſwell again, as ſoon as ſhe had gather'd her ſtrength after the ceaſing of this flux; ſne was not for that reaſon ſuppos'd to be pregnant. At length the ſame flux return'd, and a fever came on beſides.

(*n*) Ibid. Aph. 55. (*o*) De Loc. Affect. l. 6. c. 5.

And

And then neither ſhe herſelf, nor her phyſicians, ſuſpecting any thing of pregnancy; blood was taken away from her arm, and afterwards even from her foot: after which a medicine was, alſo, given to open her bowels.

A few hours after this had been given, behold! contrary to the expectation of every one, a dead fœtus was diſcharg'd; and ſeven hours after that the ſecundines. And theſe, together with the fœtus, were brought to me on the following day in the morning; which was the twenty-ninth day of Auguſt, in the year 1727; when I alſo had the caſe related to me.

The fœtus, from the crown of the head to the ſoles of the feet, was of a length equal to the breadth of ſix fingers: the funiculus umbilicalis was nine; but of a ſurprizing ſlenderneſs, ſo as to reſemble a thread of a moderate thickneſs; being without any intorſion, and every where equal.

The body of the fœtus, which was of the male ſex, was well-form'd both internally and externally; except that the whole head was of ſuch a figure, that it ſeem'd to have been compreſs'd on the ſides.

It had been of a white colour at the time of its diſcharge, but was now become brown. Almoſt all the viſcera were pallid, and nearly deſtitute of colour; and in particular the liver, which was of a ſlight yellow, degenerating into a great paleneſs. The urinary bladder was empty; and not only this but the inteſtine colon and the rectum.

Although nothing of blood, and indeed nothing of a bloody colour, appear'd in any part of the fœtus, wherever you cut into it, or of its funiculus; which was brought to me in an entire ſtate, being connected on one ſide to the navel, and on the other to the placenta; and although the firſt branches, at leaſt, from this rope into the placenta, were ſlender; certain large globes as it were extending themſelves ſomewhat in length, of a blackiſh colour, and diſtended with almoſt fluid blood, were, nevertheleſs, ſeen through the membranous ſurface of the ſecundines, where it lay under the placenta; which in this ſubject was really very large in proportion to the ſmallneſs of the fœtus.

However, although the body of the fœtus was neither externally flaccid, nor cover'd with rugous integuments; nor any diſagreeable ſmell proceeded therefrom, or from its ſecundines; I nevertheleſs did not doubt but it had either lain a conſiderable time dead in the uterus, before the dilatation of its orifice; or, at leaſt, that it had lain in a very weak ſtate, and like a dead fœtus, before it was quite dead.

6. The ſudden efflux of a great quantity of blood had, as appear'd from the diſſection, render'd the fœtus, and its funiculus, bloodleſs; and the latter likewiſe ſo exceedingly ſlender. However, as there was ſuppos'd to be no fœtus at all in this caſe, the error of the phyſicians becomes ſomewhat more excuſable, than in the next hiſtory.

7. A fœtus that was, in like manner, immature, and dead, had been ejected by another matron, in the month of Auguſt, in the year 1716. This woman ſuppoſing herſelf pregnant from her uſual ſymptoms, the phyſician, in order to diminiſh the blood, which, as he thought, abounded, took away the weight of a pound from her arm.

As her belly was not afterwards inlarg'd, in proportion to the time of her pregnancy; and the woman did not perceive the motion of the child, at the

time that ſhe had been uſed to perceive it; both the midwife, and the phyſician himſelf, otherwiſe a learned man, but not eaſily giving up an opinion which he had once imbib'd, pronounc'd that it was not a fœtus which ſhe bore in her uterus, but a mola, or falſe conception.

The mind of the woman being alarm'd at this pronunciation, and affiicted with very great ſadneſs, it happen'd accidentally, that I withdrew, during the ſummer, into my native place: and being ignorant of theſe things, I was brought to her by ſome noblemen who were her relations, and very intimate friends of mine: and this at her requeſt.

When I ſaw her to have a good colour, as ſhe uſually had, and, except the ſadneſs of her countenance, to be in good health; what need, ſaid I to her, have you of a phyſician? Why, ſaid ſhe, that he may inform me whether I am with child or not.

Then aſking the proper queſtions of her, and examining her belly with my hand, and hearing and feeling nothing, from whence I might not ſuppoſe her to be with child; and learning from her, and even from her waiting-maid, who had always attended her chamber, that every thing was now, and had been, the ſame as in her former pregnancies, if you except thoſe two things that I mention'd juſt now; you are with child, ſaid I; nor do I think thoſe two circumſtances would have been wanting, if you had not done what you did not in former pregnancies, when you was much younger; I mean if by letting blood in ſuch a quantity, you had not diminiſh'd the ſtrength of the fœtus, and retarded its increaſe.

After this at length I heard who had order'd this bleeding, and the opinion that had been pronounc'd in regard to the falſe conception. Then ſaid I, what reaſons this gentleman may have for his opinion I do not know: but I have not one that inclines me to ſuſpect a mola, or falſe conception; yet I affirm that you are pregnant with a fœtus, which is in a weak and languid ſtate, and which, unleſs you recruit yourſelf, and it, by a proper method of living, and by chearfulneſs of mind, you are in great danger of not carrying till the proper time of your delivery.

Theſe things were true, but inculcated when it was too late. For I having gone into the country for ſome time; it happen'd not many days after, that the woman, without expecting it, had ſomewhat of a bloody diſcharge from her genitals. And the phyſician, in conſequence of his prejudice in favour of his own opinion, order'd her to ride in a coach pretty ſwiftly, and over rugged and uneven places.

From thence aroſe pains. The patient return'd home. Somebody was immediately diſpatch'd to the phyſician, to conſult him what ſhould be done. The phyſician preſcribes a clyſter, and ſays that he will come by the time this has had its effect. While the clyſter was diſcharg'd, a dead fœtus is diſcharg'd at the ſame time, together with the ſecundines; but without any falſe conception.

Not long after comes the phyſician. The maid, of whom I ſpoke before, runs to meet, and accoſts, him, almoſt in the ſame words which were us'd on an almoſt ſimilar occaſion, formerly, to her phyſicians, as you have it in the Sepulchretum (*p*), by that noble Venetian matron Helena de Mocenicis.

(*p*) L. 3. ſ. 21. in ſchol. penult. ad obſ. 58.

For

For the maid ſhowing him the fœtus, ſaid, Look here, this is the falſe conception that my miſtreſs bore.

The fœtus it was out of my power to diſſect; being abſent, as I have already ſaid. But I heard, from thoſe who ſaw it, that it was ſlender, and had no ill ſmell.

8. Yet phyſicians deſerve to be forgiven, if they do not join obſtinacy with a falſe opinion. I found one to be much more docile in the ſame city, as you will immediately perceive, from the hiſtory of the caſe which happen'd in the year 1721.

9. Now take a third hiſtory of a fœtus, that was diſcharg'd by the mother in an immature and lifeleſs ſtate; which hiſtory deſerves to be written with ſo much the more accuracy, becauſe a mola was diſcharg'd at the ſame time, and thoſe things had preceded, which; as in a certain obſervation of Schacherus (*q*), that in ſome meaſure agrees with this; almoſt remov'd the opinion of true pregnancy.

A matron of a ſlender habit, and ſmall ſtature; but than whom I never remember any one to have generated more blood; and the happy mother of many children, yet ſometimes alſo ſubject to abortions; having, after her laſt delivery, which was follow'd by a very great diſcharge of the lochia, paſs'd the winter in a dejected and gloomy ſtate; in the month of April ſuppos'd, from the tokens which ſhe had been accuſtom'd to perceive, join'd with a retention of the menſes, that ſhe had conceiv'd again.

Theſe ſymptoms were follow'd by ſo great a loſs of appetite, that ſhe only ate in the evening in general, and that with difficulty; and whatever ſhe took in the morning was thrown up by vomiting.

To this was added, about the thirteenth of June, a flux of blood from the uterus; againſt which diſorders; not altogether new or unuſual to the patient; notwithſtanding the uſe of the waters of Nocera had been of advantage, at other times, after trying many things in vain, it was of no advantage now.

For theſe reaſons then, I was call'd to the patient about the middle of July. As ſhe had the moſt unſpeakable averſion to blood-letting, I therefore recommended ſuch things as ſhe would not obſtinately refuſe; as for inſtance the uſe of jellies of calves feet, coral reduc'd into a fine powder, cydonites, and a few other things of the like kind, which might counteract both the diſorders; yet in ſuch a manner as not to reſtrain the flux of blood with violence.

In the mean while, both the diſorders continued; yet ſo as to be born without difficulty. For every day in the morning ſhe roſe from bed, ſat, walk'd, and even, when ſhe pleas'd, was carried through the city in a coach (though this was what I did not much approve) and ſcarcely any blood was diſcharg'd.

In the night only, when ſhe lay either ſupine, or on her left ſide; for on her right ſide ſhe could not lie; was it diſcharg'd; whether the heat of the bed excited the diſcharge, or whether, when ſhe was not in a recumbent poſture, any thing oppos'd itſelf to the oſculum uteri which cover'd it, or in a manner ſtop'd it up.

Beſides that which had been diſcharg'd in the night, there was a large

(*q*) Progr. de Hæmorrhag. Gravidar.

quantity of coagulated blood, which came away when ſhe firſt roſe. In the mean while, to her other cauſes of grief was added one very violent, join'd with ſudden terror, on account of an unexpected misfortune of her huſband; which, as the whole city heard it with commiſeration, ſo his wife heard with tears and wringing of hands.

On the firſt night, indeed, after this calamity, the flux of blood was almoſt intirely ſtop'd. But during the following nights, it flow'd more plentifully than before. There was now no perſon who, conſidering ſo great, and ſo frequent, an effuſion of blood, could believe it poſſible for the woman to be with child; and even ſhe herſelf believ'd it no more.

The phyſician however, although my ſenior, liſten'd to me, who frequently urg'd that we muſt for a while withold our opinion, in the caſe of a woman who abounded, to ſuch a degree, with blood: that all the uſual ſigns of pregnancy had preceded; that no traces of abortion had ever yet appear'd in the effus'd blood, though it had been always accurately inſpected: that the uterus ſwell'd ſlowly indeed; but if the blood ſhould at length flow more ſparingly, it then would probably be elevated in a very little time.

We muſt endeavour therefore to render the diſcharge more moderate; for that by this means the ſtrength of the patient might alſo be more eaſily preſerv'd, the decreaſe of which was already to be argued from the patients legs not being ſo ſtrong as they had hitherto been, and from the roſy colour of her countenance being diminiſh'd.

As other things, which he had adminſter'd with this intention, did not anſwer very well; he began to give the old conſerve of roſes, as it is call'd, vitriolated, with which and the confectio alkermes; for ſo it is call'd; without perfumes, he involv'd citron-ſeeds bruis'd, and reduc'd them into the form of a bolus.

With this bolus not only her appetite began to be ſomething better, but a much leſs quantity of blood was diſcharg'd. And then; for a third part of the month of Auguſt was now paſs'd; not only the breaſts began to ſwell, as in former pregnancies, but even to be rais'd up very high.

Here then, the patient herſelf, and others, began to return to the opinion of pregnancy, which they had given up. Yet there was ſomething unuſual that made the patient and me both uneaſy; that is a frequent ſenſe of pricking in the uterus. And on this account I was inclin'd to examine her belly accurately with my hand.

In doing of which I became ſtill more uneaſy, as I perceiv'd the uterus not to be accuminated towards the navel, but more extended in a tranſverſe direction on both ſides, and not bearing the touch without pain, if it were preſs'd upon pretty ſtrongly; eſpecially at the right iliac region. I not only diſſembled my ſuſpicion with the patient by words, but even by my countenance, as I thought it my duty to do.

I open'd it however to the phyſician, and to her huſband, by ſaying that I fear'd leſt there ſhould be a falſe conception beſides the fœtus; and yet that there need be no alteration for this reaſon, in the method of treatment: for that where there was a ſuſpicion of a falſe conception, and the increaſe of the uterus was larger every day, in proportion as the leſs blood was diſcharg'd, there was not any room for ſuch things as aſtring'd violently; eſpecially as

the blood, in ſome nights, did not flow very ſparingly, yet for the moſt part of them with ſufficient moderation at preſent: nor, on the other hand, where the very great diſcharge might eaſily return, and there was ſuppos'd to be a fœtus together with the falſe conception, muſt we have recourſe to forcing, and ſtimulating, medicines, which are not always ſafe, even where there are falſe conceptions only; but that the ſtrength of the woman muſt be preſerv'd, by obſerving the ſtate of the flux, and moderating it according to occaſion; and, at the ſame time, by keeping the patient quiet both in body and mind, and nouriſhing her with aliments ſuitable to her condition.

While theſe things then were obſerv'd with attention, not many days after, when the patient happen'd to be ſtanding (which was on the eighteenth of Auguſt) the waters ſuddenly broke forth from the uterus, not differing in their ſmell, nor in any other circumſtance, from thoſe which generally are diſcharg'd by women in labour; except perhaps that they were diſcharg'd in ſomewhat larger quantity.

The midwife being immediately call'd, and finding no ſigns of an approaching birth, beſides this eruption; and even perceiving, with her finger, the os uteri to be ſhut; took care we ſhould be inform'd of theſe things: and we anſwer'd that unleſs any thing new ſhould ariſe, we muſt in the mean time lie ſtill and do nothing.

One, two, even three, days were paſs'd over in this manner. I not being greatly ſurpriz'd at it, as I remember'd not only to have read the ſame in Harvey *(r)*, and many other authors, but alſo to have ſeen in another noble-woman, and fellow-citizen of mine, the diſcharge of the waters long before the latter part of utero-geſtation; the birth not ſucceeding, nevertheleſs, till the proper time, and being happy; yet I was ſomewhat diſpleas'd with the accident in this caſe, where I ſuppos'd the fœtus to be neither robuſt, nor ſolitary.

But on the fourth day, when the belly, which had been much ſunk by the diſcharge of the waters, was again ſomewhat more elevated, labour-pains came on: the mola was firſt excluded, and after that the fœtus in a lifeleſs ſtate; and laſt of all, after the interval of three hours, the ſecundines came away not without difficulty, and a great profuſion of blood.

The mother was preſerv'd, and died nine and twenty years after, of a malignant ulcer, as I have heard, in the uterus or vagina; but one which had begun in theſe later years.

At leaſt, at the time ſhe was pregnant with this fœtus, and even in the time that ſucceeded her delivery, and for a conſiderable length of time afterwards, there was no ſymptom from whence you could juſtly ſuſpect any ulceration of the uterus, or vagina; and from thence account for thoſe effuſions of blood; as you might in a woman deſcrib'd by Raygerus *(s)*, ſince ſhe labour'd under a very great uterine hæmorrhage firſt, together with very ſevere pains of the loins, and groins, ſix or ſeven weeks before her delivery; and after her delivery, and time of child-bed, was afflicted with a profluvium of

(*r*) In additam. ad exercit. de generat. ubi de uter. humor.

(*s*) Eph. n. c. dec. 3. a. 3. obſ. 135.

very

very fœtid and black matter, by which ſhe was waſted away within a very few months.

But if you chooſe to compare our caſe with thoſe propos'd by Phil. Jacob Hartmann (*t*), and by the celebrated Guttermann (*u*); you will eaſily conceive that abortions, which are, in like manner, join'd with a falſe conception, have been preceded by a very great, and very long, profuſion of blood; and yet that this is not, and could not, with propriety, be attributed to a blood-veſſel being open'd in the vagina, and much leſs to the ulceration of the uterus, or vagina.

But let us go on to conſider the other circumſtances relative to the abortion I have deſcrib'd.

The mola being waſh'd from the blood which adher'd to it, was found to be no thicker than two fingers breadths; but ſomewhat longer; and when cut into, appear'd to be a little ſpongy, and in a manner fleſhy.

The ſecondines ſhow'd no diſorder at all. The fœtus, which was of the female ſex, was not equal in its length to nine inches. The whole of the head and neck was blackiſh, as if from a large contuſion; but without any ill ſmell. The other parts, even internally, had no preternatural appearance, as far as I could ſee.

For, by reaſon of the fooliſh moroſeneſs of the women, I was but juſt allow'd to open the belly, in which I obſerv'd the ſtomach, and ſome of the inteſtines, to be not empty, from what they naturally contain'd of a blackiſh colour.

But they would not even have permitted this, except for the ſake of comforting the parents; who, being deceiv'd by the appearance of the ſex, were greatly chagrin'd at their having loſt a boy; for I ſhow'd them the uterus, which was very ſmall indeed, but very evidently communicating with the rimula of the pudendum; as I demonſtrated to theſe curious parents; according to my promiſe, by introducing a ſlender probe through the external paſſage; for the pretty prominent magnitude of the clitoris, covering over the rimula, as is uſual in fœtuſſes of this kind, had impos'd upon them for a penis: nor is this ſurprizing, ſince it has often impos'd upon ſurgeons, and even phyſicians, in the ſame manner.

10. And you will know that this is not ſaid without reaſon by me, when you obſerve that the author of both the ſpeculations upon viviparous generation, deſcribes a fœtus in one of them, which, "having ſcarcely attain'd "to the length of a third part of the little finger, was nevertheleſs compleat, "and diſtinct in all its parts; ſo that even the maſculine ſex was extremely "well diſtinguiſh'd."

For he would not have fallen into this error, which theſe words extremely well, without any mention of doubt, or of a more accurate examination, plainly ſhow; if he had been more ſtudious of exerciſing himſelf in anatomy, than of oppoſing it; and had obſerv'd the ſame things that ſkilful anatomiſts, and particularly Ruyſch (*x*), have taken notice of, in regard to the deception in diſtinguiſhing the ſex being more eaſy, for the reaſons I have ſaid, in proportion as the fœtus is leſs.

(*t*) Dec. ead. a. 4. obſ. 84.
(*u*) Act. n. c. tom. 3. obſ. 78.
(*x*) Theſ. Anat. 6. n. 48. 51. 54. 59.

It

It concerns parents to have this vulgar error extirpated, as they very often ſuffer the more chagrine on account of an abortion, becauſe they think thoſe to be the abortions of males alſo, which are in fact the abortions of females.

But to return to the hiſtory in queſtion, whether that blackneſs of the head, as if from a contuſion, was owing to this, that the waters being altogether, or in the chief part, effus'd, the membranes were not diſtended thereby; and therefore not puſh'd downwards in order to dilate the paſſage for the fœtus; but the fœtus being propell'd by the efforts of the mother, was oblig'd to open a paſſage for itſelf through the ſtreights of the os uteri; or rather whether, if the fœtus is ſuppos'd to have been previouſly dead, which was certainly the caſe, it might have contracted an injury of that kind, (to which only living bodies, or recent carcaſes, are liable) long before; whatever the cauſe of this might be; or immediately after, death, the head being probably turn'd downwards before; and, in like manner, whether the mola is to be accus'd, which, as it preceded the fœtus, might have been interpos'd betwixt the head of it and the os uteri, and have made the way more narrow; and might likewiſe be the obſtacle which, when the woman was in a ſtanding poſture, prevented the diſcharge of blood from the uterus, as it ſeem'd to be then preſs'd upon the orifice from above; I leave quite undetermin'd.

And I do not doubt, but the waters which were effus'd, came from the amnios of the ſame fœtus, which was not excluded till the fourth day after for ſeveral reaſons; but particularly becauſe they ſeem'd to be in ſomewhat greater quantity, than they ought naturally to be.

Nor am I ignorant of its having been ingeniouſly ſuppos'd, that the waters which are diſcharg'd before their proper time, do not belong to that fœtus which is, at length, protruded; but to another: which having been conceiv'd together with this indeed; but extinguiſh'd in the firſt dawnings of life, and afterwards colliquated; has left the waters that anticipate the diſcharge, within its own proper amnios, till, by their continual increaſe, this membrane is ſo diſtended, that it can no longer reſiſt the pretty vehement motions of the other fœtus; which is ſtrong, and almoſt arriv'd at a ſtate of maturity.

But not to diſpute here, upon that increaſe of the waters, and moreover, to grant that there may, perhaps, be ſome room for this hypotheſis in ſome caſes; at leaſt there certainly was not in our caſe; inaſmuch as the fœtus was imperfect and weak; nor yet in thoſe propos'd by Peterſonius (*y*) and Dethardingius (*z*); for the fœtus which is ſaid to have drawn back, into the uterus, its head which was already thruſt out, and to have remain'd there; the one two weeks, and the other ſeven; till they were intirely excluded at the time of birth, had certainly open'd a paſſage for their own waters, and not for thoſe of others: or if theſe inſtances requir'd more firm proofs, which I readily confeſs; yet others more eaſy to be believ'd, and relative to the ſame ſubject, will not be wanting, if you ſhould have leiſure to inquire after them.

However, I am wont, for the moſt part, to account for that diſcharge of

(*y*) Eph. n. c. dec. 1. a. 1. obſ. 62.

(*z*) Earund. dec. 3. a. 5. in append. n. 8. ad cit. obſ. 62.

waters,

waters, which is premature, and generally harmleſs, from the rupture of the chorion alone; which by this means ſuffers the water, that was, perhaps, collected betwixt itſelf and the amnios, in greater or leſs quantity, according to the obſervations of Ruyſch (*a*), and of others (*b*), to flow out; although theſe perſons have, from thence, feign'd to themſelves I know not what kind of allantois in the human ſpecies.

But that the eruption of waters, before their proper time, which Hippocrates (*c*) with reaſon pronounc'd "bad," is from the amnios itſelf, I do not in the leaſt doubt. Although the birth is not always unhappy after this: yet it is generally leſs happy than it would otherwiſe have been, whether we conſider this as a cauſe, or as an effect.

For conſidering it as a cauſe, the water, being effus'd, does neither then properly dilate the paſſage for the fœtus, nor lubricate it. And as an effect; whether it be from the membranes of the ſecundines being not quite firm, or from the too great quantity of water, or finally, from the acrimony of it (in which light Martianus (*d*) chooſes rather, and not without juſtice, to conſider it, when he teaches us how to diſtinguiſh theſe two laſt from each other) it certainly does not foretell any thing good, in reſpect to the conſtitution either of the fœtus, or of the mother, or both, in their ſolids, or fluids, or both; contrary to what is requiſite to the deſir'd happineſs in child-birth, and in child-bed.

From theſe conſiderations it will be eaſy for you to explain ſome things relating to the eruption of the water, and to the other circumſtances, in the caſe of the matron in queſtion; in her delivery, and in the fœtus.

And as to the ſigns which induc'd me to ſuſpect a falſe conception, you gather theſe from the hiſtory, where, ſuch as they are, I have taken notice of them. It certainly is not ſo eaſy to know that it is preſent, as to allow us to affirm it with boldneſs: yet from the known ſigns which our anceſtors have left us, we may ſuſpect it with prudence.

The greater part of theſe; though it is not neceſſary that all of them ſhould occur together; you will ſee collected by Lamzwerdius (*e*), from whoſe book, otherwiſe in the greateſt part of it quite barren, I have obſerv'd them to be deſcrib'd by ſome authors, in this age, without mentioning his name.

Yet I did not ſuppoſe that mola, either before delivery, or after diſſection, to be one of thoſe that are call'd the true; and even always conſider'd it as a polypous concretion of the uterus, particularly in a woman (and this circumſtance induc'd me ſtill more to ſuſpect its exiſtence) from whoſe uterus I ſaw ſo great a quantity of blood was diſcharg'd; and found that this blood was ſo prone to concretion.

11. Without doubt, though ſome of the molæ are true, and others that are ſo call'd are ſpurious; yet ſome of both theſe kinds may be either join'd with a fœtus, and often cauſe abortion; whether by irritating the uterus, or

(*a*) Theſ. Anat. 5. n. 56. prope fin. & theſ. 10. n. 155.
(*b*) Vid. Littre Mem. de l'Acad. R. des Sc. a. 1701. & Commerc. Littr. a. 1732. hebd. 36. n. 3.
(*c*) Coac. prænot. ſect. 3. verſ. 187.
(*d*) Annot. ad eund. verſ.
(*e*) Hiſt. Nat. Molar. uter. c. 16.

by

by occupying a very conſiderable part of its cavity; or increaſe to ſuch a degree, without a fœtus, as to reſemble pregnancy.

But the illegitimate, or ſpurious, may be produc'd even in untouch'd virgins, and chaſte widows; the legitimate, or true, cannot, unleſs among thoſe, who, contrary to the opinion of others, ſuppoſe *ova ſubventanea*, or unimpregnated eggs, in women.

The ſpurious; to ſpeak of theſe firſt; are form'd either of blood ſtagnating in the cavity of the uterus, or of ſome internal excreſcence thereof. You will know theſe latter by a certain baſis, or peduncle, by which, as Ruyſch *(f)* has advanc'd, they are continued from the uterus, or at leaſt come off from the ſanguiferous veſſels thereof, which are produc'd into them.

But the former, which occur much the moſt frequently, and to which you will, without difficulty, refer many that are extant in the Sepulchretum, are compos'd merely of blood; in the ſame manner as other polypous concretions are form'd in the veſſels, and in the heart itſelf: and I do not ſee ſufficient reaſon, why we may not allow it poſſible, as Lanciſi *(g)* has taught, that theſe may be form'd even in the uteri of virgins, contrary to the opinion of Hoffmann *(h)*; eſpecially in the uteri of thoſe whoſe menſtrua flow in great plenty, or to whom a uterine hæmmorrhage is not unuſual; for in this, or ſome ſimilar manner, do I think that the celebrated Abraham Vater *(i)* is to be interpreted; as he allow'd of them in *ſome* virgins at leaſt.

Ruyſch *(k)* has taught us, by what means concretions of this kind may be diſtinguiſh'd from certain molæ, which have, by others, been reckon'd among the true ones; and this notwithſtanding they have ſomething join'd with them that has a reſemblance to membranes. But before I begin to expatiate a little upon molæ, I muſt not conceal from you, an obſervation of mine of a certain ſingular conformation of polypous concretions of the uterus.

12. In the place of my nativity was a noble matron, of a tall ſtature, endow'd with a good colour, and a laudable habit of body, who had ſuffer'd ſeveral miſcarriages in the firſt months of her pregnancy; but in the intervals of theſe abortions, however, ſhe had frequently completed her period of utero-geſtation, and brought forth very large living children, and even ſometimes twins; thought not without great difficulty, and troubleſome times of child-bed.

Betwixt theſe difficult births ſhe had, for the moſt part, been ſubject to a fluor albus of an innocent nature; and, ſometimes, in the midway betwixt her menſtrual purgations, to a ſlight ſtillicidium of blood alſo, which the embraces of her huſband, eſpecially when rather more violent, renew'd: and not without ſome conſiderable pain.

This woman then, when ſhe had paſs'd about her thirty-fourth year, being intirely rid of her fluor albus; began to labour under a new kind of diſeaſe at intervals, which recur'd frequently, within the ſpace of two years: but in the three laſt months of the year 1723, and the firſt of the following year, in which month I was conſulted by letter, it return'd at a certain time; that is at the time of the menſtrua.

(f) Cent. obſ. anat. chir. 58.
(g) Epiſt. ad Mulebancher.
(h) Diſſert. de ignor. uteri ſtruct. §. 19.
(i) Diſſ. qua mola pregnans &c. theſ. 12.
(k) Cent. citatæ obſ. 29.

For at that time pains, like thoſe of child-birth, coming on; and the flux of blood beginning on the firſt or ſecond day, and flowing even more plentifully than uſual; in almoſt the middle of its courſe a membranous body, as it appear'd, was diſcharg'd from the uterus: and that in ſuch a form, and of ſuch a magnitude, as perfectly correſponded to the triangular cavity of the uterus; being moderately convex externally; on which ſurface it was unequal, and not without many filaments that ſeem'd to have been broken off from the parts to which they had adher'd; but internally hollow; on which ſurface it was ſmooth, and moiſt, as if from an aqueous humour, which it had before contain'd, but had diſcharg'd, at its own exit, by an ample foramen, which was in one of its angles, that had been readily open'd by rupture.

The excluſion of this body was follow'd by a great quantity of the lochia; and thoſe were often interrupted according to the cuſtom of women. And if this body came away ſometimes, not in an entire ſtate, but divided into little pieces, and at different times; then the pains, and the flux of the lochia, were in like manner renew'd at theſe times.

As the patient therefore, in each of theſe four months, in which ſhe had abſtain'd from the embraces of her huſband, had ſuffer'd one of theſe very troubleſome kind of abortions; and the remedies which had been preſcrib'd by many excellent phyſicians, who had been conſulted, had been of no uſe at all; ſhe began to think that it would be much more advantageous to her, if ſhe could be free from the pains for nine months at leaſt; and determin'd to lie alone no longer: wherefore in the month of March 1724, ſhe became pregnant. Yet ſhe did not carry her fœtus beyond June.

But this was the conſequence of it; that in July, and the two following months, her menſtrua flow'd properly, and without any uneaſineſs.

However, as none had appear'd in the month of October, the pains return'd again about the beginning of November, with the diſcharge of ſuch a body as I have deſcrib'd; and with the other circumſtances I have ſpoken of above.

And the ſame ſymptoms continued to return a long while, at ſtated intervals; ſo that when I was at Forli, in one of the following years, I ſaw a body that had been diſcharg'd, which, as I had written to them when abſent, was made up of a polypous concretion reſembling a membrane, and diſpos'd into the form of a ſmall triangular purſe: ſo that it was eaſy to conceive, that the viſcid particles of the ſerum of the blood, iſſuing forth from the uterine orifices of the veſſels, which had been formerly diſcharg'd in the form of a fluor albus, were now become more viſcid, and adher'd to all the internal parietes of the uterus, and by this means were concreted into a polypous membrane; and being moulded to the figure of that cavity (which, in the Adverſaria (*l*), I have affirm'd to be almoſt of the figure of a triangle) as if taken from a real mould, reſembled a purſe, into which the watry part of the ſerum, that had been betwixt thoſe more viſcid particles, being expreſs'd, was retain'd; preſerving the purſe hollow, and rendering it internally ſmooth: and that they were retain'd with eaſe, becauſe, either on account of the faſciculi of fibres that protuberated within the cervix, or on account of the narrowneſs

(*l*) I. tab. 3 & IV. animad. 42.

of

of this part, if compar'd with the fundus, or by reaſon of the impediment of the orifice, which was almoſt cloſe, the viſcid particles ſtagnating, and being every where contiguous to one another, ſhut up the purſe from the very beginning: and finally, that this, at firſt, by oppoſing an obſtacle to the blood which was about to burſt out every month, caus'd the veſſels of the uterus to be diſtended, and pains by this means to be excited; but after that, when by the force of the impelling blood, it was drawn away from the parietes of the uterus, it increas'd the pains and made them violent; and laſt of all that being torn quite away on all ſides, it was thrown out of the uterus, not without a great quantity of blood preceding, accompanying and following it, on account of that great diſtention of the veſſels.

Thus you have the opinion that I had of this diſeaſe, in the beginning, and afterwards: which diſeaſe, to me who remember'd the obſervations of Platerus (*m*), and of others, and thoſe which were not unknown even formerly to Aetius (*n*), ſeem'd by no means new, in this circumſtance, that, at the ſtated time of the menſtrua, ſome concretion ſhould be diſcharg'd, and that for a long time together; but in this, that the concretion was of ſuch a peculiar form, which I do not remember to have read of in other authors: and indeed I remember Platerus to have expreſly aſſerted, that he could find "no cavity" in his concretion.

To ſome of thoſe who were conſulted, this of ours ſeem'd to be an excreſcence of the uterus; to others a polypous concretion indeed; but from blood diſtilling through ſome eroded veſſel, in the uterus itſelf.

But if they had either inſpected it, as I did, or had read the deſcription thereof, in the letters written to me by this lady's huſband; which were much more accurate than thoſe of the phyſician; I doubt not but they would readily have laid down thoſe opinions, which time, alſo, ſhow'd to be foreign to the truth.

For although the diſeaſe laſted a long while afterwards; yet it at length ended of itſelf, and through the effects of age.

That is to ſay, when the time was come, in which the menſtrual purgations generally leave women, it now firſt began to return, not every month, but only twice, or thrice, every year: and when the menſtrua entirely ceas'd, it ceas'd alſo: nor did any ſign of even the moſt ſlight eroſion in the uterus, or any inconvenience therefrom, exiſt during the whole life of the woman; and ſhe liv'd until a cancer, which aroſe in one breaſt afterwards, carried her off when on the verge of ſeventy years of age.

Moreover, the opinion of the phyſician, whom this patient made uſe of, was that theſe concretions were unimpregnated eggs; conſidering, I ſuppoſe the ſame thing that they did, who have taught us to diſtinguiſh polypous molæ, from thoſe which are from ſuch eggs, by the cavity which would be within theſe latter, and not within the former.

But if we were even to allow of ſuch eggs in women; it would nevertheleſs be difficult to ſay, why, in this woman, they ſhould always be drawn

(*m*) Obſ. l. 3. ubi de inanimat. excret. (*n*) Medic. Tetrabi. 4. ſerm. 4. c. 80.

out into the form of a triangle, and why in each month, one ſhould be ready to deſcend into the uterus at a ſtated time.

But thus far on this ſubject. Now let us add a few things upon true molæ, as I have promis'd.

13. The moſt learned men of our age only call thoſe molæ true, or legitimate, which are not produc'd without a previous conception. But ſome believe that they may be form'd of the fœtus, and ſecundines; others of the placenta only; if from any cauſe whatever, the appearance of theſe parts are chang'd, ſo that they cannot be readily known to be thoſe, which from the original formation they had been; whether they repreſent a kind of fleſhy maſs, or even a maſs much harder than fleſh; or a congeries of veſicles; as that which Mercatus (*o*) ſaw formerly.

You have Ruyſch in your hands, who has ſhown, even in the placenta alone, both theſe kinds of changes; and that in ſeveral places, but particularly in his obſervations: and as theſe were publiſh'd in the year 1690, I do not ſee why none of them, that I have refer'd to here or above (*p*), are transfer'd into the Sepulchretum; at leaſt to increaſe the ſcholia of this ſection.

For he has taught us (*q*), that the placentulæ, of very ſmall fœtuſſes, frequently remain in the uterus; and being compreſs'd by the uterus conſtringing itſelf more and more, ſeem to be very different from what they were; and not only in figure, but alſo in their ſubſtance, which is very ſimilar to the moſt hard fleſh.

And that the placentæ of pretty large fœtuſſes, remaining in the ſame cavity, ſometimes degenerate into veſicles full of a watry humour, the ſame author, if any other, very clearly ſhows; ſince he found one and the ſame placenta in part found (*r*), and in part already chang'd into veſicles of this kind.

But notwithſtanding theſe obſervations are true, three or four things, however, ought to be added.

Firſt, that the placentulæ of the ſmaller fœtuſſes do not, however, fail to degenerate ſometimes into veſicles; as the ſame author Ruyſch demonſtrated the beginnings of this change in the placentula of a fœtus "of almoſt three "months;" and in another "placentula ſhow'd the ſame change ſtill more "clearly" (*s*).

In the ſecond place, that this change does not agree with the placenta alone; ſince it is certain, not only from the later obſervations of Ruyſch, that he had ſeen a veſicle "many times" in the funiculus umbilicalis (*t*); but it is even manifeſt, from his more early obſervations (*u*), that the ſame funiculus had ſometimes occur'd to him in a ſtate ſo full of "veſicles, that the "whole of it ſeem'd a concatenation of veſicles fill'd with a watery humour:" and it is even certain from the obſervation of our Valliſneri (*x*), that a placenta was diſcharg'd from the uterus, after a very great number of veſicles, ſo that;

(*o*) Sect. hac Sepulchr. 37. obſ. 1. §. 4.
(*p*) N. 11.
(*q*) Obſ. 28. 29. 58.
(*r*) Obſ. 33.
(*s*) Theſ. anat. 6. n. 102. 103. & tab. 5. fig. 3. 4. 5.
(*t*) Ibid. n. 45. & tab. 2. fig. 3.
(*u*) Obſ. 14. & fig. 15.
(*x*) Opere tom. 2. p. 1. ubi de Partu Veſicular.

unleſs

unleſs you ſuppoſe this to have belong'd to another fœtus; it would appear that theſe veſicles, therefore, had not been from the change of the placenta; which you may alſo infer from the obſervations of others: as, for inſtance, from thoſe of the celebrated Guttermann *(y)*.

In the third place, that it may perhaps be doubted with the ſame Valliſneri, who I ſee has obſerv'd nearly all the things that I have obſerv'd, whether that degeneracy, of the placenta into veſicles, is brought about at the time when it remains in the uterus, after the excluſion of the fœtus; or whether it is brought about before this excluſion.

At leaſt, in the placenta of a fœtus of four months, which had been excluded together with the fœtus, I have ſeen a veſicle full of water. Yet on this ſuppoſition, ſuch a change would be ſeen more frequently in the placentæ, which are diſcharg'd with the fœtuſſes.

Finally, in the fourth place, as it is ſaid above, that neither of theſe kinds of molæ are produc'd without a preceding conception, and neither of them, certainly, by untouch'd and pure virgins; that I remember to have read; there is, beyond a doubt, need of the greateſt ſkilfulneſs, and diligence in examining; nor leſs prudence in pronouncing; if at any time a woman who is ſaid to have abſtain'd herſelf from man, ſhould diſcharge a body from the uterus, which, at firſt ſight, might ſeem to belong to one or the other kind; leſt it ſhould perhaps not be a placenta, but a mere concretion of blood, or ſome excreſcence which bore a reſemblance to fleſh, or the veſicles, whereof I have ſpoken.

For that excreſcences, which reſemble fleſh, or are really fleſh, have been met with at times is very well known: and what they are which bear a reſemblance to theſe veſicles, has been ſaid in the preceding letter *(z)*.

And indeed, as there is ſometimes a dropſy in the cavity of the belly from hydatids; as, for inſtance, ſuch as Ruyſch *(a)* has repreſented to have been included in a peculiar ſac; ſo it is not repugnant to probability, that a dropſy of the uterus is ſometimes produc'd in the ſame manner: eſpecially as Aetius *(b)* has deſcrib'd this; unleſs it is to be conſider'd as a mola made up of veſicles, as others have choſen to conſider it; in his chapter *De Uteri Hydrope:* his words are, "a quantity of moiſture is collected in the womb, "and ſometimes certain corpuſcles, very ſimilar to the gall-bladder, are ge- "nerated therein, and in theſe corpuſcles a humour is collected:" and theſe corpuſcles he calls below "bladders compos'd of pellicles, and fill'd with "water."

Nor are examples wanting, of a long-continu'd dropſy being ſolv'd by a very great number of hydatids diſcharg'd from the uterus; one of which kind you will read propos'd by the celebrated Kannegieſſerus *(c)*, in an old woman who was about ſeventy years of age: although there may be ſome who ſuſpect, that, in this caſe alſo, theſe hydatids belong'd to a true mola; that is to ſay from the placenta of the fœtus, conceiv'd while the age of the woman as yet allow'd of it, and carried in the uterus many years after the death of the fœtus.

(y) Act. n. c. tom. 3. obſ. 78.
(z) N. 20. & ſeq.
(a) Obſ. cit. fig. 24.
(b) Med. Tetrabibl. 4. Serm. 4. c. 74.
(c) Act. n. c. tom. 6. obſ. 89.

Which

Which I take notice of for this reaſon, becauſe the celebrated Rideux *(d)*, in regard to the mola of another kind indeed; but of the legitimate kind, as he does not doubt; which was diſcharg'd by a widow in the ſeventy-ſeventh year of her age; although of ſuch a magnitude and weight, that it is ſurprizing, no ſigns of its exiſtence had ever been given; thinks, nevertheleſs, for thoſe reaſons which he gives, that it had its origin from a conception of the woman, when ſhe was in her fifty-fourth year: that is in the year when her menſtrual purgations, being not at all diminiſh'd quite to that time, ceas'd of a ſudden: and ſhe had brought forth her ninth child in the fifty-firſt year of her life.

And theſe things being ſuppos'd, you may gather two uſeful inferences from thence. One, that we may conſider, whether you can from hence explain, or at leaſt in ſome meaſure, how the woman of whom you read in Valliſneri *(e)*; who was herſelf alſo the mother of many children; the laſt of which ſhe was ſuppos'd to have brought forth almoſt in her fiftieth year; in the ſeventy-ſecond year of her life at length diſcharg'd a placenta from the uterus, and, annex'd thereto, a maſs, weighing a pound, of rude, and unform'd fleſh; if you except a kind of ſimilitude to an eye in the upper part; and certain involutions within, as if of the inteſtines of a fœtus: and, in like manner, how another woman *(f)*, older by a year than the laſt; who had formerly had her menſtrua return, and been impregnated, and had them return now again for one month or two; diſcharg'd "veins;" if they were really veins, and could preſerve their form ſo long; together with a much larger maſs of fleſh.

And the other uſeful inference is, that if any thing of this kind ſhould come from any widow, even long after the death of her huſband, which comes near to the nature of a true mola, and even is a true mola; we muſt not immediately doubt of her chaſtity: ſince, as has been ſaid above, the placentula might have remain'd in the uterus formerly, in an abortion that had not been much taken notice of.

And though theſe things by no means take place in virgins; yet even in them, as I ſaid, we muſt conſider again and again with accuracy, and take care that no deception may happen.

And that this may be avoided as far as poſſible; it will be proper to attend to thoſe things, in fleſhy excreſcences, and in polypous concretions of blood, which are taken notice of above *(g)*, and to read over the places of Ruyſch that are referr'd to; and indeed to add the obſervation of the celebrated Schlierbachius *(h)*, who; although he ſaw a mola "in ſome meaſure "vaſcular, and, at the ſame time, fill'd with copious hydatids, that ſeem'd "interlarded with a great quantity of fat;" did not for this reaſon deny that it came from a virgin; I ſuppoſe becauſe even in polypous concretions there is often an appearance that in ſome meaſure reſembles fat; and we ſometimes ſee thoſe appearances that reſemble veſſels: as to hydatids, I ſpoke of them juſt now.

(*d*) Mem. de l'Acad. R. des Sc. a. 1735.
(*e*) Tom. 2. cit. p. 2. c. ult.
(*f*) Eph. n. c. cent. 6. obſ. 74.
(*g*) N. 11.
(*h*) Act. n. c. tom. 7. obſ. 61.

Thus Phil. Jac. Hartmann alſo (*i*), did not ſuffer himſelf to be deceiv'd, either by the appearance "of a fat cuticle," or by "many coats intermix'd "with fibres, and veſſels, of a white colour;" or, finally, by "a veſicle "inherent internally, and containing a jelly;" but acknowledg'd it to be nothing more than "a coagulum of blood:" notwithſtanding it was in a woman, in regard to whom, if he had ſaid that it was a true mola, he would, from thence, have brought no reproach upon her honeſt fame; as ſhe was a married woman.

We muſt therefore inquire, not what appears, but what really is, and that with accuracy; for true fibres, true veſſels, true coats, and a bladder made up of theſe, cannot exiſt without the interpoſition of a man.

Nay, even a bladder of this kind, would be the moſt legitimate among all molæ; as it is the involucrum of the beginning of an embryo, and of the humour in which the embryo ſwims; if a thing of this kind were comprehended under the name of a mola, as it is now underſtood by moſt perſons: although the ſame Hartmann (*k*), and the celebrated Gotwaldt (*l*), in imitation of him; the laſt of which authors has illuſtrated his obſervation by a figure, very ſimilar to thoſe that were publiſh'd afterwards by Ruyſch (*m*); have call'd this very appearance "a mola veſicularis," or bladder-like mola.

This, therefore, cannot exiſt in virgins, nor, as far as I know, that in like manner, which might with more propriety be call'd a "mola veſicularis;" I mean a congeries of veſicles diſpos'd after the manner of a cluſter of grapes.

And leſt any deception ſhould happen in judging of this, it will not, I believe, be uſeleſs to inſpect the moſt accurate deſcriptions, and repreſentations by figures, of thoſe which have been diſcharg'd after conception; and to attend to the branches, or ramifications therein, to which they have often hung when diſcharg'd.

Deſcriptions and figures of this kind, you will not find in ſo perfect a ſtate in Ruyſch (*n*); although he has repreſented the veſicles more than once, and has mention'd them many times; as in Malpighi (*o*), and Valliſneri (*p*).

And certainly, thoſe ſmall excreſcences which are made up of veſicles, and which I have happen'd to ſee within the uterus, had no appearance of branches, to which the veſicles were hung; but were crouded cloſely to each other, and coher'd either by their own ſubſtance, or by means of an interpoſing ſubſtance, which was neither ſlender, nor ramifying.

14. However, there are ſo many obſervations publiſh'd, of bladders being ejected from the uterus; and ſo many collections of thoſe referr'd to by men of erudition; that I ſhould ſeem to be undertaking a very uſeleſs labour, if I ſhould add, at large, any others that have come to my knowledge.

For I know that a matron of Forli, about forty years ago, diſcharg'd veſicles, ſome of which were larger, others ſmaller, and ſome very ſmall; and that here likewiſe, the wife of one of the governor's ſervants diſcharg'd, in

(*i*) Eph. n. c. dec. 3. a. 5 & 6. obſ. 206.
(*k*) Earund. dec. 2. a. 10. obſ. 157.
(*l*) Earund. dec. 3. a. 9 & 10. obſ. 159.
(*m*) Theſ. Anat. 6. tab. 2.
(*n*) Adverſ. Anat. dec. 2. c. ult.
(*o*) Op. Poſth.
(*p*) Opere loc. cit. & Eph. n. c. cent. 9. obſ. 73.

the

the year 1727, a great number, inſtead of a fœtus that was expected; and that Albertini, about the beginning of the year 1724, had, once and again, at the diſtance of a month, ſeen a congeries of veſicles diſcharg'd from a certain woman (not without ſome fever and ſevere pains) which reſembled the larger branches of the red currants in their figure and diſpoſition; except that they were of a colour ſomewhat more dilute: nor indeed does the colour ſhow that thoſe veſicles were different from others which we ſpeak of; ſince not only Tulpius (*q*) has not doubted that ſome, which were diſtended with "a yellow water," but Lanciſi (*r*) alſo, that others, which were on one and the ſame branch, among the reſt that were full of a limpid, or yellowiſh fluid, and were diſtended "with a kind of rediſh cruor," belong'd to this claſs; nor yet thoſe celebrated men Magnenius (*s*), Dechiappa (*t*), and Guttermann (*u*); the latter of whom in ſome of the largeſt, and the ſecond in all; for they were all pretty large; ſaw "a bloody" or "rediſh ſpot" internally: but Magnenius, in another mola, ſaw ſome "of a yellowiſh co-"lour;" and two only or three externally "rediſh;" and in another, of the ſame woman, found all them; which were innumerable and very ſmall; "of a very red colour."

To theſe obſervers you will finally add the illuſtrious Haller, where (*x*); deſcribing white veſiculæ, which adhered to ſtalks going out from the placenta; he ſays that in the placenta itſelf alſo, "there had been more red "veſicles, which were connected to each other in the ſame manner."

I omit others, in which nothing is remark'd that has any reference to a red colour; whether the bladders have been diſcharg'd from the uterus, in a looſe and unconnected ſtate; as thoſe probably were, that are mention'd in the Commercium Litterarium in the year 1745 (*y*), and certainly, if I am not miſtaken, thoſe that are taken notice of by the celebrated Phil. Conrad. Fabricius (*z*); or not in this free and unconnected ſtate, but diſpos'd in a confus'd order; as thoſe which are deſcrib'd by the celebrated Wogan (*a*); or, at length, whether they are "collected like cluſters of grapes;" as thoſe which were ſeen by the celebrated men Jo. Sebaſt. Albracht (*b*), and Jo. Jac. Treyling (*c*): to which claſs almoſt all thoſe belong'd that I ſpoke of juſt now.

A great number of the ſame kind have alſo been brought to me ſometimes; eſpecially, in the year 1716, thoſe which a woman of Verona had diſcharg'd, after the excluſion of a fœtus, by a violent abortion.

Theſe I examin'd together with him that had ſent them, Valliſneri. But as for the ſame reaſon, I ſuppoſe, that has been mention'd; I mean the very great number of hiſtories of that kind already given; he did not, as far as I know, publiſh this obſervation, I ſhall likewiſe paſs it over.

I ſhall rather add what a kind of incipient mola veſicularis, I found in the uterus of a bitch, in the year 1723; for there are not ſo many hiſtories ex-

(*q*) Obſ. Med. l. 3. c. 32.
(*r*) Epiſt. ſupra cit. ad n. 11. quæ prima eſt apud Valliſner. Iſt. della Generaz. p. 3. c. 3.
(*s*) Act. n. c. tom. 1. obſ. 166.
(*t*) Ibid. obſ. ead.
(*u*) Obſ. cit. ſupra ad n. 9.
(*x*) Opuſc. Pathol. obſ. 40.
(*y*) Hebd. 33. in fine.
(*z*) Propempt. ad Diſſ. I. B. Hoffmanni, not. *c*.
(*a*) Eph. n. c. cent. 9 obſ. 85.
(*b*) Commerc. Litter. a. 1738. hebd. 28. n. 1. in fine.
(*c*) Act. n. c. tom. 5. obſ. 134.

tant,

tant, of a mola of this kind ſeen in the uterus, as when diſcharg'd therefrom: and it muſt be that molæ are more rare in brute animals, than in women; ſince not only Ariſtotle *(d)* has ſaid that they "are either generated in "women alone, or in women chiefly;" but alſo, among the more modern writers, Harderus *(e)* denies his "having ſeen any thing of this kind, that was "diſcharg'd from the uterus of a brute;" and requeſts of others, "that if "they have found any appearances of this kind at any time, they do not "withold the relation thereof from him and the public."

It does not eſcape me, that in the eggs of hens, whether excluded, or inherent in the ovaria, molæ have been found; as by Valliſneri *(f)*, and by Gotwaldt *(g)*.

And in thoſe brute animals that they call perfect, of which Harderus ſeems to ſpeak, I do not deny, that there may perhaps be examples which are more clear, in the beginning, than this that I am about to produce: at preſent however, I do not remember to have read them: and although a very learned man ſays, "that Valliſneri had deſcrib'd a mola veſicularis, even in "a cow;" he perhaps meant to ſay in a bitch, in which animal he did really deſcribe *(h)* one; but one of ſuch a kind that he himſelf has confeſs'd it "difficult to judge, whether it was not ſome preternatural production from "the ſubſtance of the uterus."

15. A little bitch which had brought forth young ſeveral times, but not more than two at each birth; having, a month before, copulated with a dog, was ſuppos'd to have become impregnated: at laſt having ſeem'd to be ſad, and melancholy, for ſome days, ſhe was ſuddenly ſeiz'd with convulſive motions, and died without any howling. The maſter of the bitch; who was a learned man, and an intimate friend of mine; came to me on the day following, and beg'd of me, that if it was convenient I would inquire into the cauſe of the creature's death: which I immediately did, in the preſence of him, who had order'd the carcaſe to be brought, and others who were ſkill'd in diſſection.

The lateral ventricles of the brain, and eſpecially the left, contain'd a great quantity of water; which the redneſs of the choroid plexuſſes ſhow'd to have been effus'd there not long before death.

The cavities of the heart were full of blood almoſt coagulated, and very black.

The membranes of the belly in particular; for they were fat in other places; were loaded with ſo great a quantity of fat, and chiefly about the uterus, that I could not demonſtrate the whole ſlender tract of both tubes.

The teſtes, although near to one of them hydatids were ſeen, had no veſicle ſuch as they generally have in a natural ſtate: nor was it to be wonder'd at, ſince the whole of them ſeem'd to be in a manner fleſhy: that is to ſay, from the bodies which we call corpora lutea, in cows and in women, being contracted.

(*d*) De Generat. Animal. l. 4. c. 7.
(*e*) Eph. n. c. dec. 2. a. 2. obſ. 185.
(*f*) Opere tom. 1. p. 3. pag. 126. & tom. 2. p. 212. n. 16. & pag. 240. n. 9.
(*g*) Eph. n. c. dec. 3. a. 9 & 10. obſ. 157.
(*h*) Opere tom. 2. p. 2. verſ. finem.

Yet the cornua were both of them tortuous in their paſſage: and in ſeveral places more or leſs protuberant; although not ſo much dilated into diſtinct cells in any part as I have been us'd to ſee in bitches, that had been pregnant for ſome time.

The whole internal ſurface thereof was tender to the touch, and red. But in thoſe places where larger protuberances, than the reſt, appear'd externally, a thick humour was contain'd, of a mucous nature, and of a white colour mix'd with green; ſo as to reſemble pus; being inodorous, and ſhowing no primordia of the fœtus.

This humour was ſurrounded by a kind of ſoft and rediſh ſubſtance, wherein veſicles full of water diſcover'd themſelves; theſe veſicles being of a different magnitude, but all ſmall in their ſize, and not very numerous in their quantity.

16. Among the other cauſes of falſe pregnancy, I ſee that, in the Sepulchretum, after molæ, other tumours of the uterus are with propriety reckon'd; and not only of the uterus, but of ſome other parts of the belly alſo.

Of the uterus, whether they be from internal or external excreſcences, or from humours in the parietes of that viſcus; or even ſtagnating in the cavity thereof; when the paſſage of the oſculum outwards is ſhut up by any cauſe that either conſtringes, or obſtructs, it. And of ſome other viſcera, and of the meſentery in particular. Upon all which ſubjects as I have in general written more, or leſs, on former occaſions; it is not neceſſary to repeat the ſame here.

But I will rather diſpatch that queſtion, which I remember you aſk'd of me; I mean when, and how, by reaſon of one kidney only being created in ſuch a manner, from the firſt original of the body, the belly may be prominent, ſo that even an anatomiſt may be deceiv'd; and take this prominence for an utero-geſtation? For that this has been advanc'd, among the other cauſes "which reſemble pregnancy," in this ſection of the Sepulchretum (*).

Although I foreſee, that I muſt enter into ſo much more prolix a diſcourſe than you imagine, that I may ſeem, to you, to have digreſs'd from the intention of this letter; yet I ſhall do it willingly: and that not only becauſe if I miſs this opportunity, I ſhall have no other proper occaſion of ſatisfying your requeſt, but becauſe I ſhall endeavour to reduce into ſome order, almoſt innumerable obſervations of the kidney alone; which reduction I ſhall endeavour to make as uſeful as poſſible.

But it would certainly have been much more eaſy for me to have ſatisfy'd you now, if thoſe who collected examples, after Pinus (**), of one kidney alone being found, Schenk *(i)*, Bauhin *(k)*, Riolanus *(l)*, Panarolus *(m)*, Rhodius *(n)*, Hornius *(o)*, Blaſius *(p)*, Francus *(q)*, Hilſcherus *(r)*, and others after them, had, every one of them, given thoſe that were already publiſh'd

(*) XXXVII. Vid. titulum. obſ. 3. prefix. ad n. 6. qui pro n. 7. ibid. ponitur.

(**) Annot. ad pag. 51. 8. Opuſc. Anat. Euſtach.

(*i*) Obſ. Med. Rar. l. 3. ubi de Renib. obſ. 2 & 3.

(*k*) In Notulis ad Theatr. Anat. l. 1. c. 22.

(*l*) Anthropogr. l. 2. c. 26.

(*m*) Jatrologiſm. Pentec. 1. obſ. 3.

(*n*) Mantiſſ. Anat. obſ. 32.

(*o*) Annot. *g*. ad Botalli. obſ. anat.

(*p*) Append. ad Bellin. de Renibus.

(*q*) Eph. n. c. dec. 3. a. 5 & 6. obſ. 176.

(*r*) Proluſ. de unico reperto Rene.

in

in their times; as they might eaſily have done; and had diſtributed them into certain claſſes.

But they have omitted ſome even in books that are in every one's hands: and thoſe they have produc'd, they have generally made a practice of pointing out almoſt promiſcuouſly; whereas it would not have been difficult to divide them into thoſe wherein one kidney only was form'd; and into thoſe where one kidney, to appearance, was made up of two; and the firſt of theſe again, into thoſe wherein the kidney occupies the ſide as uſual; and into thoſe wherein, being laid upon the ſpine, it holds a middle ſituation.

To thoſe firſt, wherein the kidney lies on the ſide; beſides the antient examples from Ariſtotle *(s)*; belong thoſe which ſo many after him, and among theſe Sphærerius *(t)*, and Solenander *(u)*, from Mat. Stoicus, Plazzonus, *(x)*, with Sylvaticus, in whom it will be better to read them, Haller *(y)*, and Petſchius *(z)* have propos'd; and if you chooſe rather to ſet aſide, on this occaſion, my doubt that has been hinted in the fortieth letter *(a)*, even Tulpius *(b)*, and Meekrenius *(c)*.

Which doubt you may ſet aſide in the obſervation of Hilſcherus *(d)*: although this may be added, by you, to thoſe that are in the Sepulchretum, on the ſubject of renal iſchuriæ, from calculi; yet to omit other things, ſufficient teſtimonies are collected by the ingenious inquirer, to convince us that one kidney had been wanting from the original formation: juſt as it was in that profeſſor of Cabrolius *(e)*, and in the young man of Manfredi, the little bitch of mine, and the rabbet, all of which were taken notice of by me on former occaſions *(f)*; and even in the prieſt, and the woman of Valſalva, and the girl of Poupart.

And there was this proof alſo, in that woman, of there having been but one kidney from the original formation; I mean that the kidney was furniſh'd with two *pelves*, and two ureters: and we not only read that there was the ſame number in the young man of Panarolus *(g)*, and in the ſoldier of Laubius *(h)*; but beſides, that one of the ureters had inſerted itſelf into that part of the bladder, to which no kidney correſponded.

To the examples hitherto mention'd, all of which belong to the firſt claſs, it is probable that many others may be added; either ſuch as do not occur to me at preſent (for I never take upon me to imagine that I have either read or remember'd all) or ſuch as the writers themſelves have ſo expreſs'd, as to ſay that there was one kidney only; as Columbus *(i)*, Fernelius *(k)*, Caſpar Wolphius *(l)*, Laurentius *(m)*, Boſcus *(n)*, and Jo. Scultetus *(o)*; who points out both his father's obſervation and his own; and Salzmann *(p)*: and out

(s) Apud Schenck. obſ. cit. 2.
(t) Ibid.
(u) Ibid. obſ. 3.
(x) Apud Rhod. cit. obſ. 32.
(y) Opuſc. Pathol. obſ. 60.
(z) Syllog. Anat. Select. obſ. §. 77. 78.
(a) N. 14.
(b) L. 4. obſ. med. c. 38.
(c) Obſ. Med. Chir. c. 40.
(d) Proluſ. cit.
(e) Obſ. var. 14.
(f) Adverſ. Anat. 3. Animad. 32. & Epiſt. 40. n. 14.
(g) Obſ. 3. cit.
(h) Eph. n. c. cent. 9. obſ. 16.
(i) De Re Anat. l. 15.
(k) Phyſiol. l. 1. c. 7.
(l) Apud Schenck. obſ. cit. 2.
(m) Hiſt. Anat. Hum. Corp. l. 6. c. 23.
(n) De Facultat. Anat. lect. 2.
(o) Trichiaſ. Admir. pag. 89.
(p) Apud Stehelin. in Tentam. Med. Th. 1.

of the obſervers who are quoted by thoſe very learned men, Rhodius (*q*), and Haller (*r*); Lopez, Ronſeus, Duretus, Handwigius, and Humelius; ſome have perhaps given examples that belong to this claſs: I ſay "perhaps" for this reaſon, becauſe ſome of the books referr'd to are not in my hands; and others, as far as I could inquire, do not contain thoſe things that are ſpoken of; juſt as I turn'd over the Commentaries of Carpus on Mundinus in vain; for that "other example," as Riolanus (*s*) ſays, I did not find where it principally ought to have been.

And although moſt of theſe authors, of both claſſes, have ſaid, that this one kidney was large; and even ſome of them, as Columbus, that it was "very large; as Fernelius, "of a ſuprizing bulk and magnitude;" as Boſcus "of an almoſt incredible magnitude and breadth;" you are not immediately, for this reaſon, to ſuppoſe that they have ſpoken of the kidney, which did not belong to the firſt diviſion of the firſt claſs.

For you very well remember, how much either of the kidnies may grow out (*t*): why then may not the kidney, when there is only one, be large in the ſide? It may even be very large, if the effect of a diſeaſe happen to be added; and calculi, pus, and urine, are retain'd ſo as to diſtend its ſubſtance, as is the caſe in more than one of the examples produc'd above.

However, do not imagine, that, in ſaying theſe things, I approve of what has been aſſerted by a learned man; that when there was only one kidney, "it had always much exceeded the natural magnitude of the kidney, by the "teſtimony of all obſervations."

For I do not ſee this remark'd in all the obſervations: and, indeed, I ſee that Panarolus (*u*) expreſsly admoniſhes us, "that it had not exceeded its "proper proportion" in his; and Valſalva (*x*), in one of his, that it was "of its natural magnitude."

Wherefore, Riolanus (*y*) was leſs wide from truth, when he aſſerted that "if one ſolitary kidney be found, it generally equals the magnitude of "both." I wiſh I could approve of what he immediately adds, "and that "it lies upon the back; the canals of the aorta, and vena cava, being a little "remov'd, in order to afford a ſituation for the ſolitary kidney."

But what a number of examples there are, of a ſolitary kidney retaining its uſual ſituation, is evident from what has been ſaid above. And as to its lying upon the back, and removing the large veſſels (which circumſtance has not always been obſerv'd even then) if all the obſervers of a ſolitary kidney had, in general, ſeen theſe appearances; they would, without doubt, have noted them down, as not leſs rare to themſelves, than the unity of the kidney which they ſaw at the ſame time: but as this has not been done, by thoſe who have taken notice of nothing elſe but the ſolitary ſtate of the kidney, I have therefore ſaid above, that it is probable their obſervations related to the firſt part of the firſt claſs, and not to the ſecond; which, though it is much more rare, Riolanus ſuppos'd to be the only one: as if it contain'd all the examples of a ſolitary kidney.

(*q*) Obſ. 32. cit.
(*r*) In Acceſſ. ad Boerh. Meth. Stud. Med. p. 7. ſect. 4. c. 14.
(*s*) C. 26. cit.
(*t*) Vid. Epiſt. 40. n. 14.
(*u*) Obſ. 3. cit.
(*x*) Epiſt. 25. n. 4.
(*y*) Encheir. Anat. l. 2. c. 28.

But

But before I ſpeak of this part, it will be more convenient to diſpatch the ſecond claſs; to which I referr'd not ſo much the kidney made inſtead of two, as made of two.

And this I would have you underſtand, not as if I denied, that, in ſome of the examples produc'd above, one kidney ſeem'd to be made up of two; ſo that it was furniſh'd both with a double pelvis, and double ureter; or as if I contended, that, of two kidnies, which were firſt created in a ſtate of diſtance, and diviſion, one had afterwards coaleſc'd with the other, upon the increaſe of the embrio.

For I mean nothing elſe here, but what appears to the firſt judgment of the ſight. Jacobus Berengarius (*z*) ſaw this the firſt, as far as I remember. In a certain man, ſays he, "the kidnies were continued into each other, as "if it had been one kidney: and it had two emulgent arteries, two emulgent "veins, and two ureters, with only one involving panniculus: this occupied "the uſual places of the kidnies, and even the middle of the back, which "is in the part betwixt the ſpleen and the liver, a little below them."

And to the ſame claſs belongs that ſolitary kidney ſeen by Rondelet (*a*), "which was of the ſhape of a moon; both the kidnies, without doubt, be-"ing in conjunction;" and that which Blaſius (*b*) ſpeaks of from Doldius; and that which Riolanus (*c*) deſcribes as being found by him and "plac'd "above the ſpine . . . . . the cone being inclin'd downwards, and the horns "rais'd upwards."

Nor do I ſuppoſe that ſeen by Piccolhominus (*d*) to be of a different kind; except that the conjunction was made betwixt the ſuperior parts of the kidnies; as, when "it lay tranſverſly upon the vena cava, and the great artery, "its flat and ſinuous ſurface was turn'd downwards, but the gibbous and "convex ſurface turn'd upwards;" ſuch as in figure and poſition, the illuſtrious Winſlow (*e*) ſaw in a monſter.

In the other examples, the horns were turn'd upwards, as in the former inſtances; and in thoſe of Thomas Bartholin (*f*), and Stalpart (*g*); who alſo ſaw ſomething ſimilar with Nuck (*h*); the celebrated Haller (*i*), Vernoius (*k*), and Petſchius (*l*), to ſay no more of Graffeckius and Bæchius, than what I know from Haller (*m*); I mean, that one of them "had ſeen a kidney made "by a coalition of two," and that the other "had mention'd a kidney con-"ſiſting of the two grown together, from the original formation:" and to return to the Italians; Jo. Orontio Azzaritti, a native of la Puglia, formerly my pupil, ſent to me, in the year 1721, a deſcription, and delineation, of a ſolitary kidney; on which he had lit in diſſecting a human body at Venice, and which may be compar'd with that of Bartholin, whereto it was very ſimilar: for beſides other things, I believe it may ſhow from whence the ſpermatic arteries, which Bartholin has ſaid did not exiſt at all, might ariſe.

(*z*) Iſag. de Anat. Ventr. Inf. ubi de Renib.
(*a*) Apud Schenck. obſ. cit. 2.
(*b*) Cit. Append. fig. 13.
(*c*) Anthrop. c. cit. 26.
(*d*) L. 2. Prælect. Anat. 22.
(*e*) Mem. de l'Acad. R. des Sc. a. 1740.
(*f*) Cent. 2. Hiſt. Anat. 77.
(*g*) Cent. 1. Obſ. Rar. Med. 50.
(*h*) Ibid.
(*i*) Opuſc. Anat. p. 5. tab. 6. fig. 9.
(*k*) Comment. Acad. Sc. Imper. Petropol. tom. 3.
(*l*) Syllog. cit. §. 79.
(*m*) Acceſſion. ad cit. c. 14. Meth. Stud. Med.

And

And in the year 1732, Bonazoli (*n*); who was, while living, my friend, and whom I have ſpoken in commendation of on former occaſions alſo; deſcrib'd a kidney of the ſame kind.

Finally, I myſelf in the year 1740, found, about the middle of December, in a girl of ſix years old, and demonſtrated in the hoſpital, to all who were preſent; both men advanc'd in knowledge, and ſtudents; a ſolitary kidney: which you may ſee not inaccurately trac'd out, and drawn at my houſe, and differing from moſt others in this circumſtance, in particular, that the right lobe was diſtant from the left by no very great interval; the former being laid upon the latter in the lower part, and divided with a ſulcus as it were, which was not very deep however, and only on its anterior ſurface: ſo that an iſthmus was form'd, which was not leſs ſlender than either lobe.

Francus (*o*) is the only one, as far as I know, who ſaw, and gave a delineation of, an iſthmus "of very great vaſtneſs and amplitude" as his expreſs words are.

But as he ſays nothing of the thickneſs, and even ſays that each lobe was in that ſituation the kidnies are wont to occupy; as I underſtand it to have been in the obſervations of others, in which, although the whole kidney was very large, it, nevertheleſs, lay upon the ſpine only with a very ſlender iſthmus; I was not willing to confound theſe examples, with thoſe that belong to the ſecond part of my diviſion, to which I now paſs on; and which comprehends thoſe examples, wherein the whole body of the kidney was laid upon the ſpine.

And to this part of the diviſion I ſhall ſuppoſe that to belong, which Carolus Stephanus (*p*) ſaw, together with Jo. Vaſſeus; that is to ſay, "one kidney alone, ſituated exactly on the middle of the ſpine; and this very large:" and we may likewiſe add what Andernacus had ſaid (*q*), "that ſometimes "one kidney only appear'd to be connected to the middle of the ſpine."

And that which is deſcrib'd, and repreſented in a plate, by Botallus (*r*), and was ſo large as to ſeem to be made up of four, is extremely well known.

Nor is that unknown, which Cabrolius (*s*) found, in the ſervant of the profeſſor, who has been mention'd; "a ſolitary kidney, but of an incredible bulk, lying upon the vertebræ of the loins:" to which the celebrated Fantonus (*t*), in like manner, ſaw "a ſolitary, and very large, kidney, adhereing."

To the ſame claſs you will refer that which the frequently-commended Haller (*u*) found in a girl of a year old.

And to return to the more ancient writers, and, at the ſame time, to come nearer to that point, for the ſake of which I enter'd into this long diſcourſe; Veſalius (*x*) had written, that ſometimes, in thoſe who "have the belly exceedingly prominent, and the order of the ribs vitiated, he had ſeen a ſoli-

(*n*) Comment. de Bonon. Sc. Acad. tom. 2. p. 1.
(*o*) Obſ. cit. 176.
(*p*) De Diſſect. Part. Corp. Hum. l. 2. c. 15.
(*q*) Anat. Inſtit. l. 1.
(*r*) Obſ. Anat. 1.
(*s*) Obſ. cit. 14.
(*t*) Diſſert. Anat. Renov. 7.
(*u*) Opuſc. Pathol. obſ. 59.
(*x*) De Corp. Hum. Fabr. l. 5. c. 10.

"tary,

" tary kidney; and that a very large one; plac'd upon the vena cava, and " the large artery."

Euſtachius *(y)* has aſſerted, that he had formerly once ſeen an unuſual ſituation of a ſolitary kidney of this kind; but " that he remember'd only " this circumſtance very well; that it lay ſupported on the middle of the " ſpine, and ſupplied the deficiency of the other kidney by the increaſe of its " own bulk:" and he ſubjoin'd the following words: " but whether nature " has given one kidney alone, to thoſe, in particular, who have the belly very " prominent, and the order of the ribs vitiated, I confeſs I am ignorant: " and I exhort thoſe who ſtudy anatomy, to obſerve, with diligence, whe- " ther this be true or not."

From that time I do not remember to have read any author, who attended to this exhortation of Euſtachius, when he lit on a large kidney lying on the ſpine; nor yet when he found the iſthmus of two lobes lying tranſverſly thereto.

And even in both caſes, I have either found nothing remark'd in the examples hitherto produc'd; or only, that the man being in very good health, he was taken off by the ſword, the halter, or a malignant fever; if you except the obſervations of Piccolhominus and Azzaritti: the former of whom has hinted, that there was a bad conſtitution of body; perhaps from the iſthmus preſſing upon the vena cava and great artery, and, for that reaſon, injuring the function of both; and the latter accounted for an aneuriſm of that artery, from the ſame cauſe; that is an aneuriſm which had ariſen betwixt the appendages of the diaphragm, eroded the vertebræ, and at length put an end to life, by pouring out a great quantity of blood into the left cavity of the thorax.

The iſthmus however, for the moſt part, being but ſlender, unleſs it happen to grow thick gradually, or the blood, being immoderately increas'd in its quantity, diſtend the ſubjected large veſſels, does not generally do ſo much harm.

I, when in the body of a girl, I found an iſthmus not leſs ſlender than either lobe; as I have already ſaid; and the lobes not very far diſtant from each other; as they did not occupy the uſual ſeats of the kidnies; but lay upon the very ſides of the vertebræ; did not think that I ought to neglect the exhortation of Euſtachius.

However, the abdomen of the girl was not prominent; nor did the courſe of the ribs vary from its uſual order; ſo that if any perſon ſhould have been willing, with Veſalius, to deduce the cauſe of the lobes having been excluded from their ſituation by the unuſual flexure of the ribs forwards; it would have been quite out of his power.

Nevertheleſs, that the belly was, in this caſe, but little prominent, was leſs to be wonder'd at here; as the whole kidney was neither one of the largeſt, nor had any conſiderable part of itſelf laid upon the anterior part of the vertebræ. But I can ſcarcely believe, that, when a very great bulk of one ſolitary kidney is ſuperadded to this part, which is of itſelf ſo prominent, the belly is not prominent.

(y) De Renibus c. 20.

And

And indeed I read that our Plazzonus (*z*) " had ſuppos'd" that woman, in whom there was a ſolitary kidney, " to be pregnant at firſt ;" that is before he open'd the abdomen: and I ſuppoſe that our Spigelius would have thought, or rather ſuſpected, the ſame thing alſo ; if it had been a woman, inſtead of a man, in whom (*a*) " he found a kidney very ſimilar to that woman's kidney."

And now you, of yourſelf, plainly ſee, although what I ſaid when I was ſpeaking of Plazzonus, is related in this very thirty-ſeventh ſection of the Sepulchretum (*b*), among the examples of falſe pregnancy ; that it is not to be underſtood as being extended any farther than to the ſuſpicion of the anatomiſt, who is about to diſſect the body. For while the woman is living, and interrogated upon the point, the tumour cannot impoſe upon us for a pregnancy, which did not begin a few months before ; but exiſted quite from the original formation.

But we may be impos'd upon, by one or other of the kidneys being grown very large from diſeaſe ; not naturally ; and fallen down into the hypogaſtrium.

Thus, in a matron of whom you will read in the hiſtory of the Royal Academy of Sciences at Paris (*c*), it might have been taken for a pregnancy of the uterus, which had been of three or four months ſtanding ; eſpecially as the menſtrua were obſtructed ; if the age of the woman, her health, and ſome other things, that follow'd, had not caus'd a different perſuaſion.

Thus far of falſe pregnancy.

17. It comes in courſe now, to ſpeak of abortion ; but of this only with brevity. For I have already produc'd three obſervations thereof above (*d*), when I was ſpeaking of true pregnancy being miſtaken for the falſe : and it were almoſt endleſs to recount all the cauſes of this diſorder ; whether they exiſt in the fœtus, or the ſecundines, or have their origin from the diſeaſes of the mother.

Examples of many of theſe latter, that paſs from the mother into the fœtus, are collected by Frederic Hoffmann ; in that diſſertation, which, altho' it is, in general, intitled " of the diſorders of the fœtus in the uterus of its " mother," turns, nevertheleſs, for the moſt part, upon thoſe that are communicated by the mother.

We, on the contrary, will ſpeak of thoſe former ones ; and yet not of all. But as I have written above of ſome of the diſorders of the placenta ; I will now touch upon ſome that are either cauſes of abortion ; or make that abortion dangerous.

That the placenta, when thicken'd and become hard, may be the cauſe of abortion, I do not doubt ; for at firſt, by its increas'd bulk, it renders the the ſpace of the uterus too narrow for the fœtus ; as has alſo been obſerv'd by Corteſius (*e*), where he taught that the placenta " ſometimes becomes " very thick and hard." And the hardneſs renders it unfit for its office ; wherefore the fœtus, being depriv'd of its nouriſhment, periſhes ; which Abraham Vater (*f*) confirms by the obſervation of a ſcirrhous placenta.

(*z*) Apud Rhod. obſ. cit. 32.
(*a*) Ibid.
(*b*) Obſ. 3. §. 7.
(*c*) A. 1732. obſ. Anat. 7.
(*d*) N. 5. 7. 9.
(*e*) Miſcellan. Medic. dec. 9. epiſt. 3.
(*f*) Diſſ. ſupra ad. n. 11. cit. theſ. 10.

The

The ſame author thinks, that, when the fœtus is dead, if the placenta remain in the uterus, and fix'd thereto, it may itſelf receive the nouriſhment from the uterus, and by this means become ſtill thicker than it was before: nor is he the only one who entertains this opinion.

But there is, on the other hand, a caſe, in which, by reaſon of the interception of the nutriment, both the placenta, and fœtus, are extenuated in a ſurprizing degree: and although this appears, in part, from the obſervations of thoſe very celebrated men Hoyerus (*g*), Mœkringius (*h*), of a fœtus being diſcharg'd "in a very emaciated ſtate, and with its bulk exceedingly "diminiſh'd," after great diſcharges of blood from the uterus; the funiculus umbilicalis, at the ſame time, being almoſt deſtitute of moiſture," or "the placenta ſmall and almoſt juiceleſs, and furniſh'd with little blood; "as their own words are;" yet this is more clearly ſhown, by the hiſtory which was communicated to me, by a phyſician who was my friend.

18. A certain woman was now in the fourth month of her pregnancy, and juſt entering upon the fifth, when news was ſuddenly brought to her of the inſtant death of her abſent huſband. Being ſtruck with grief and fear at the ſame moment, ſhe, from that very time, at firſt obſerv'd the motion of the fœtus to be made more languid; and after that to ceaſe intirely. And at the end of the eighth day after ſhe ceas'd to feel the child's motion, ſhe miſcarried.

The placenta, the dead fœtus, and the funiculus umbilicalis were all ſurprizingly thin and ſlender. The fœtus was quite white: and in the funiculus was ſome appearance of veſſels, but theſe were almoſt deſtitute of moiſture.

19. That abortion, which is produc'd by other cauſes alſo, often returns; and this at the ſame interval of time, from conception, that the former had happen'd; as, for inſtance, at the fourth, third, or ſecond month, from that time; and yet that its return has been prevented by proper remedies, you will learn from Stahl (*i*).

I, however, remember none to have return'd more frequently, than that, which; being firſt brought on by a great, and ſudden, affection of the mind, as I have read in Schulzius (*k*); return'd three and twenty times, always at the ſame diſtance of time from conception at which it had firſt happen'd; that is at the third month; notwithſtanding no remedies, that could be ſuppos'd, by the moſt celebrated phyſicians, to have effect in preventing it, were neglected.

You ſee then, what power paſſions of this kind have, in producing theſe effects.

But in the caſe propos'd by me, I ſhould believe it had happen'd to the uterus, and conſequently to the radicles of the placenta, that thoſe fluids which were carried back from the fœtus, and the placenta, to the mother, paſs'd on with eaſe; but that thoſe which were carried from the mother, to the placenta and fœtus, were not carried without difficulty; as the mother, being ſo affected in her mind, could neither ſend ſufficient nouriſhment,

(*g*) Eph. n. c. cent. 1. obſ. 51.
(*h*) Comerc Litter. a. 1736. hebd. 21. n. 3.
(*i*) Diſſert. de Abortu, c. 1.
(*k*) Diſput. qua corp. hum. momentan. alterat. ſpecim. expend. §. 34.

nor nouriſhment ſufficiently prepar'd, nor driven towards the uterus with ſufficient force, at the time when it was neceſſary, according to the uſual courſe of nature, that every thing in the uterus ſhould be more and more increas'd every day.

There has been, on the other hand, when I ſuſpected, that the extreme tubuli of the little placenta, together with the uterus of the mother, being contracted by the ſudden cold of death, the blood was obſtructed in its return from fœtuſſes, that were, in other reſpects, very healthy; and this blood being collected together in the liver; which was then greatly diſtended and tender; had made an impetus thereon, and burſt forth into the cavity of the belly.

I will here add the obſervations: you will explain them as you pleaſe.

20. A cow had been pregnant with a fœtus for a little time only, as will appear preſently, when ſhe was ſold by her maſter who was ignorant of this, and kill'd.

The uterus, and the fœtus, I diſſected with care; the latter not being longer than a ſpan, from the upper part of the head, to the beginning of the tail. Every thing was in a natural ſtate; except that blood was extravaſated and coagulated about the liver: and that in a conſiderable quantity too.

21. Another cow was likewiſe advanc'd two months in her pregnancy, when ſhe was kill'd by the butcher.

Upon cutting open the uterus, and examining whatever was contain'd therein, I found all to be ſound; except that the belly of the fœtus was diſtended with ſuch a quantity of extravaſated blood, that before I open'd it, I conjectur'd what would be the appearance, from the blackneſs that was ſeen through the extenuated abdomen: and the very tender ſtate of the liver, together with a laceration which it had at one part, plainly ſhow'd from whence this blood had been diſcharg'd.

22. But whether the ſame thing happens in fœtuſſes more advanced, I do not know.

Certain it is that thoſe injuries, which, I have ſaid above (*l*), come to the fœtus, from the hardneſs of the placenta, are obſerv'd only in the firſt months of utero-geſtation.

And that fœtuſſes, which are now ſtrong, and approaching to the time of birth, ſhould periſh for that reaſon; thoſe in particular, who do not doubt but a great quantity of aliment is then taken in by the mouth, will not eaſily believe; unleſs the placenta ſhould happen to be made univerſally hard, or otherwiſe unfit for its office.

For I think there is no reaſon to doubt, that the ſame cauſe, from whence I have ſeen it vitiated in any part more than once, may give occaſion to a much greater part being vitiated. What I have ſeen the ſubjoin'd obſervations will ſhow.

23. A fœtus that was mature for the birth; whoſe motion the mother had perceiv'd two days before, but ſince that had not perceiv'd; was born dead.

The ſecundines, together with the fœtus, were brought to me about the beginning of June in the year 1731. In them I found this one thing which was preternatural.

(*l*) N. 17.

When

When I inſpected the hollow ſurface of the placenta, within the ſubſtance of it, at the diſtance of two inches from the inſertion of the funiculus, I ſaw, through the upper part of its ſubſtance, a body of a yellowiſh colour mix'd with white. And cutting into this, I ſaw it compacted of thick membranes as it were, ſome of which were lying upon the others.

As this body was not larger than the laſt joint of my little finger, there did not ſeem ſufficient reaſon, why I ſhould impute the death of the fœtus thereto; or even that ſoftneſs which I obſerv'd in moſt of the viſcera, to ſuch a degree, that not only the liver became fluid at the very touch; but the coat of the kidnies alſo being incis'd, the ſubſtance thereof was effus'd under the appearance of a red pultice.

24. Twins, that were equally healthy and lively, were born at the proper time of delivery, in the beginning of June likewiſe, but in the year 1742.

In examining the ſecundines (which our Mediavia had taken care to have brought to me) with accuracy, I obſerv'd other things that do not relate to the preſent ſubject; and the following that do. One of the placentæ (for each fœtus had been furniſh'd with one, and what happens more rarely they were entirely disjoin'd from each other; and not only the clauſtrum of the membranes was in like manner perfectly divided, as uſual, by a membranous mediaſtinum) one of the placentæ then, not far from the edge of it, had a body, of the diameter of my thumb, going from the convex to the concave ſurface; ſo that it might be equally ſeen from both ſurfaces.

The whole of this body conſiſted of a white ſubſtance, every where ſimilar to itſelf, and not more hard than the placenta; and in the other placenta, alſo, was a body conſiſting of the ſame white ſubſtance; but only on its convex ſurface, and not larger than a ſmall vetch.

25. However both of theſe twins were equally healthy, as I have already ſaid; ſo that you would not, certainly, conceive the leaſt injury to have happen'd to them even by the large white body.

Let us ſuppoſe that theſe twins had been oblig'd to remain longer in the uterus; and yet whether it was poſſible then, that theſe bodies might have been inlarg'd, or have degenerated into that ſtructure, which I have deſcrib'd in the placenta of that other fœtus; and, in like manner, whether it was the ſame kind of diſorder; leſs advanc'd here, and more advanc'd there; or a different one, I confeſs I am quite ignorant.

A diſorder it certainly was, which if you ſhould chooſe to add to that I made mention of above (*m*), in deſcribing a certain fœtus; you will confeſs that the placenta is liable to more than one diſorder, beſides thoſe that are more known among the common people.

And if this diſorder extend itſelf to a conſiderable degree; there ſeems no room to doubt, but it may be a cauſe of abortion, and of the death of the fœtus. This is generally the effect of ſcirrhous placentæ, into which the diſorders obſerv'd by me, would, perhaps, in courſe of time, have degenerated.

For thoſe celebrated men, Jo. Sebaſt. Albrechtus (*n*), and Jo. Juſtus Fickius (*o*), have ſeen abortion from thence: both of them of monſtrous fœtuſ-

(*m*) N. 5.
(*n*) Act. n. c. tom. 4. obſ. 104.
(*o*) Commerc. Litter. a. 1732. hebd. 20.

ſes, or far leſs than the beginning of ingravidation requir'd; as Fickius ſaw the ſubſtance of the placenta ſo ſcirrhous, that it could, by no means, be now capable of performing its function, and the funiculus umbilicalis corrupted, and in a manner dried; and Albrechtus ſaw ſmall tumours lying at a diſtance from each other, thro' the placenta, internally of a whitiſh colour, very ſimilar to ſcirrhous glands; and betwixt them, about the origin of the funiculis, an hydatid full of a yellowiſh humour.

At which place, the celebrated Roederer (*p*) alſo ſaw a bladder, wherein a humour of the ſame kind was contain'd; but a much larger bladder, the fundus of which was conſtituted by the very ſubſtance of the placenta itſelf, and was full of a pretty ſoft ſcirrhus.

But becauſe abortion, as I ſaid juſt now, is alſo accounted for from the corruption of the funiculus umbilicalis; we muſt not omit to take notice, that it may alſo be deduc'd, either from the too great thickneſs, or thinneſs, ſhortneſs, or length thereof.

An example of the firſt, and ſecond cauſe, you will ſee taken notice of by Ruyſch (*q*); who had even repreſented the firſt in a figure, as "not being "unfrequent" (*r*).

And you perceive, that, as too great, or too little, a quantity of fluid being carried to the embryo, or being carried back from it, may be fatal thereto; ſo the veſſels of the funiculus, being either more capacious, or more ſlender, than they ought to be, may make the rope either more thick, or more thin than is natural; nor is that which Ruyſch alone (*s*), as far as I know, ſaw, and that once only, to be conſider'd in any other view than that of being very rare, and wonderful; I mean that a child was born, healthy, in whoſe funiculus umbilicalis was a tumour form'd, "hard in its conſiſtence, and of a "ſubſtance partly fleſhy, and partly heterogeneous, mix'd with a ſmall "quantity of fluid;" unleſs, perhaps, it was external in its ſituation, ſo that by preſſing upon the veſſels it could not make them more ſlender; or had not begun to take a ſufficient increaſe, before the latter part of utero-geſtation.

And when the funiculus is very ſhort, being drawn down by the agitations of the fœtus, it makes an impetus upon the placenta; or at leaſt does ſome injury thereto; obſervations of which kind are extant in this ſection of the Sepulchretum, that is in the thirty-ſeventh (*t*). To which you may add that propos'd by Littre (*u*), of a funiculus being ſo contorted, that it not only became more thin by one half than before, but alſo ſhorter by one half.

But one that is very long is liable to be convoluted in the form of a halter, or to be diſpos'd into knots; ſo as to ſtrangle the fœtus (*x*), or vehemently conſtringe its own veſſels. For the celebrated Gutterman (*y*) found the veſſels obſtructed by the force of a double and cloſe knot, which could not be drawn aſunder, but with a very ſlow and cautious hand; making an excellent conjecture at the ſame time, that the firſt formation of the knot was indicated by the diminution of motion in the fœtus; and after this more and ſtill more; and that when, at length, none at all of theſe motions are perceiv'd,

(*p*) Diſſert. de Fœtu perf. §. 15.
(*q*) Adverſ. Anat. dec. 2. n. 10.
(*r*) Theſ. 6. tab. 2. fig. 5. & tab. 3. fig. 2.
(*s*) Theſ. 9. n. 3.
(*t*) Obſ. 1. §. 7. & 9.
(*u*) Mem. de l'Acad. R. des Sc. a. 1701.
(*x*) Sepulchr. obſ. 1. cit. §. 8.
(*y*) Commerc. Litter. a. 1731. ſpecim. 20.

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we may gather, from hence, that the cloſeſt conſtriction of the knot is brought on.

But that the ſame ſucceſſive decreaſe of motion, which is finally follow'd by an abolition, may happen alſo in the injury of the placenta, when increas'd every day; as for inſtance, by reaſon of the ſhortneſs of the funiculus, or from a ſcirrhus, or any other diſorder which increaſes therein more or leſs; is not only hinted by reaſon, but particularly confirm'd by obſervations, one of which you will find in the Sepulchretum (*z*): and others you may collect from the diſſertation (*a*) of the celebrated Peter Stuart, who confeſſes that he had receiv'd the dogmas advanc'd by him, from the mouth of the very experienc'd Friedius (*b*).

26. Now I will ſpeak ſlightly of ſome other diſorders, from whence women, who miſcarry, are in danger. Ruyſch (*c*) knew that there were many phyſicians, who, being ignorant that in the firſt months of utero-geſtation, the placentæ are of themſelves very ſmall; but finding that, by reaſon of a great quantity of blood for the moſt part adhering to them, cloſely, on every ſide, they ſeem larger, having ſeen theſe placentæ after being expell'd by miſcarrying women, and expecting in vain a fœtus correſponding to that placenta in ſize, whereas that which there had really been, had either eſcap'd without being perceiv'd, by reaſon of its diminutive ſize, or had been diſſolv'd into nothing; or a kind of fluid; had given medicines to expel the fœtus, to the great detriment of the mother.

He therefore thought that phyſicians ought to be admoniſh'd of this eaſy deception. And this admonition I think ought to be the more inſiſted upon by us, becauſe, beſides that blood adhering to the placenta, and increaſing it, I have hinted above, according to the opinion of Vaterus (*d*), that the placenta itſelf may actually increaſe to an unnatural ſize; when the little fœtus is already dead, and for that reaſon more likely to eſcape notice, with great eaſe.

27. But there is another diſorder much more dangerous. For, as the placenta of an immature fœtus; or at leaſt of one that would not have been excluded at that time, if no violence had taken place; is, for the moſt part, affix'd to the uterus cloſely, as four and unripe apples are to their ſtalks; it ſometimes happens that it is fix'd extremely cloſe: and that with the danger which this obſervation of Valſalva ſufficiently demonſtrates.

28. A woman of three and thirty years of age, having, while pregnant, once and again lifted a certain heavy weight, from one place to the other; ſhe brought forth a fœtus of ſeven or eight months: but the ſecundines did not follow. The day after ſhe was ſeiz'd with a fever and rigor: and this fever growing ſtronger and ſtronger, a few days after a difficulty of reſpiration was added.

In the mean while a fœtid matter was diſcharg'd from the genitals, with ſome pieces of the ſecundines. Finally, convulſive motions, and hiccups, attack'd the patient: her belly became very tumid: and ſhe died on the eleventh day after delivery.

(*z*) §. cit. 7.
(*a*) De Secundin. Salutif. & cæt. c. 2. §. 8.
(*b*) In Proem.
(*c*) Theſ. Anat. 6. n. 81.
(*d*) N. 17.

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Her belly being open'd, the inteſtines and ſtomach were found to be ſo full of flatus, that the ſtomach occupied four times as much ſpace, as it generally does in a natural ſtate.

Upon opening the uterus, a great portion of the placenta offer'd itſelf, to the view; part of which hung down through the os uteri: and a part was ſo cloſely affix'd to the uterus, that it could ſcarcely be ſeparated even by the help of the knife, and this portion was condens'd into a hard and very fœtid body; the natural ſtructure of it being obſcur'd. And that part of the uterus, to which it had adher'd, was occupied by a pretty deep inflammation; which was alſo extended through the remainder of that ſurface, but ſlightly.

29. Whether you refer this obſervation to the claſs of unſucceſsful births; of which I am now to ſpeak; or by reaſon of the violent cauſe by which the fœtus was diſcharg'd, before the full time of its delivery, you refer it to the claſs of abortions; it is evident that a part of the placenta, being fix'd to the uterus, had caus'd the death of this woman.

And this part muſt have remain'd fix'd after the ſeparation of the reſt, either by reaſon of a diſorder of the placenta, fixing very thick, very long, or very numerous, radicles into the uterus at that part; or, what comes to the ſame thing, by reaſon of the diſorder of the uterus, which receiv'd thoſe radicles in that place, into more cloſe, more deep, or more frequent pores; or from ſome other diſorder peculiar either to the uterus or placenta; or even common to both.

But, whatever this diſorder might be, which ſome other cauſe; that was the conſequence of thoſe exertions in carrying a weight, and prov'd by the acceleration of delivery; ſeems to have increas'd; at leaſt this obſervation, at it increaſes the number of thoſe upon which they ground their reaſonings, who contend that the placenta ſhould never be left in the uterus; ſo it alſo gives a handle to the followers of Ruyſch, as three obſervations that you have in this thirty-eighth ſection of the Sepulchretum do alſo (*e*); gives a handle I ſay to reply, that at leaſt the extraction of the placenta is not to be haſten'd, when it is ſo firmly and cloſely annex'd to the uterus, that it can ſcarcely be ſeparated with the knife, as was the caſe in this woman: for that Ruyſch (*f*) meant this, when he admoniſh'd us that we ought not to be in a hurry to extract the placenta, if "it adhere ſo firmly to the uterus, as no body would "ſuppoſe, but he who had experienc'd it;" that is to ſay, if "it be at-"tach'd to the uterus, as if it had become one ſubſtance therewith:" nor indeed did he, and his followers, on the other hand, want obſervations of very conſiderable miſchief, and even death, having follow'd the violence of a haſty extraction.

I confeſs, however, I do not take upon me ſo far as to ſettle theſe controverſies, which are of ſome ſtanding, and were agitated among our countrymen, before they were by much later authors; and carried on to ſome conſiderable length of time: many writings being publiſh'd on both ſides (*); on one hand by Monilia, and on the other by Ramazzini.

(*e*) Obſ. 10. §. 1. 2. 3.
(*f*) Adverſ. Anat dec. 2. n. ultimo.
(*) De his vide epiſt. 8. n. 29.

I will

I will only ſay, that there is great need here of experience, and prudence, according to the exigency of the caſe, to prevent us (which is very difficult) from violating either of the precepts of Celſus (*g*): "that it is better to try "a doubtful remedy than none at all: (*h*) yet we muſt take care not to let "this remedy fall under the reproach of having kill'd the patient, whom her "own ſevere fortune had ſubdued."

And indeed, the moſt grave and conſiderate men are afraid of violence; as, after well weighing the arguments on both ſides, they agree that there is no better remedy, either in art or nature, than to wait prudently for ſome little time.

And this I have ſeen more than once, when the woman lately delivered has been carried from her chair to bed; the uterus gradually contracting as ſhe lay quiet and unmoleſted, and throwing off the ſecundines at the ſame time.

You will read that Hoyerus (*i*) had ſeen the ſame thing from the mere removal of the woman from one place to another. And if you turn over what has been lately written, upon this controverſy, by that very experienc'd phyſician Andreas Paſta (*k*); you will not only ſee, that every thing is treated of with great erudition, and judgment, but in particular will commend his prudent counſels, and admonitions; and this among the reſt (*l*); I mean that the woman be remov'd from the obſtetrical chair; wherein ſhe is now wearied and languid, and endeavours in vain to diſcharge the placenta; into bed; that in a recumbent poſture, the heart and the uterus may be able to do in a little time, what they could not do in a ſitting poſture.

But phyſicians are frequently brought into theſe ever terrible dilemmas that I was ſpeaking of, by the improper haſte of the midwives; I mean of thoſe who, as ſoon as ever ſlight pains have ariſen, oblige the women to expel their fœtus by too haſty endeavours.

For, nature diſpoſing all things gradually and ſlowly, for an eaſy delivery, makes the connections of the uterus with the placenta alſo, if time be given, more prone to ſeparation; and even ſeparates it in the ſame manner ſhe had join'd it: but if time is not given; the quantity of blood that is added round about aſtringes it ſtill more.

And with what impetus nature impels the blood, not only to this part at that time, but elſewhere, is ſufficiently ſhown by the example of that woman (*m*), in whom the plexus choroides were ruptur'd, "from a very ſtrong, and "untimely, exertion, during the pains of labour;" whereby ſo great a quantity of blood was extravaſated, that, "the brain being compreſs'd into a "very narrow ſpace," a fatal apoplexy was unavoidably brought on.

30. The ſame midwives, alſo, deſerve great blame, when they are ſo much in a hurry, as, of themſelves, to rupture the membranous ſecundines, which it is evident ought not to be done, unleſs ſome neceſſity obliges them; as, for inſtance, if they are of ſuch a thickneſs or hardneſs, as to de-

(*g*) De Medicina l. 2. c. 10.
(*h*) Ibid. l. 5. c. 26. n. 1.
(*i*) Eph. n. c. cent. 1. obſ. 51.
(*k*) Ragionamento aggiunto al Diſc. int. al fluſſo di ſangue & cæt. conſider. 13.
(*l*) N. 185.
(*m*) Act. n. c. tom. 1. obſ. 241.

lay, for a conſiderable time, and not without danger, the birth which would otherwiſe have already naturally come on.

For frequently, by an untimely effuſion of the waters, the birth, for many reaſons, from an eaſy and natural one, becomes difficult.

What? when, of a difficult labour, they make a fatal one, and the birth impoſſible; as when the paſſages not being ſufficiently dilated, either becauſe it is the firſt time the woman has been in labour, and ſhe is pretty far advanc'd in life, or becauſe the circumference of the pelvis is pretty narrow, or ſome tumour is the cauſe of obſtruction; or when the fœtus not being properly turn'd for its own exit, they oblige the woman to exert herſelf, and ſtrain exceſſively; or make no ſcruple to give ſuch things as they have heard do ſtrongly expel the fœtus, by exciting the uterus to more vehement contractions; or at leaſt by exciting the blood and ſpirits.

From whence nothing can more eaſily happen, than, as on one hand the fœtus is ſtrong, and robuſt; and on the other the mother exerts herſelf with all her power; as the fœtus cannot be propell'd through the natural paſſage; that the uterus is at length ruptur'd, and affords it an opening by which it makes its way into the cavity of the belly; either with its head its feet or its whole body; and kills itſelf and its mother.

I wiſh this caſe of the uterus being ruptur'd was very rare: for it is not only not rare, but more frequent than many imagine. At leaſt you have, in this one ſection of the Sepulchretum (*n*), nine inſtances thereof. To which there are many that might have been and may be added.

For I have now, in my hands, four or five diſſertations, in which "the "uterus ruptur'd in child-birth," is treated of. Each of theſe advances new examples; and not only that, but one of them, as for inſtance that which is publiſh'd by the celebrated Behlingius (*o*), points out other not very recent examples at the ſame time.

The frequency of theſe caſes may be conceiv'd of, even from the writings of our Veſlingius (*p*); and it is ſurprizing to me, that, as many learned men, certainly, have collected examples of the uterus being ruptur'd by the fœtus, none of them ſhould have mention'd him.

For Veſlingius having written of one of theſe caſes, which had occur'd to him in the year 1640, ſaid afterwards, in the year 1647, the following words: "the uterus itſelf is ruptur'd, which happens more frequently than is com- "monly ſuppos'd; and has been found by me four times already, in the diſ- "ſections of gravid women."

And the aſſertion of Veſlingius, beſides thoſe three inſtances that were met with by Santorini (*q*), is not only ſufficiently confirm'd by the teſtimony of one ſurgeon, who affirm'd to the Royal Academy of Sciences at Paris (*r*), that he had ſeen ſixteen inſtances within thirty years; but is alſo ſtill more confirm'd by that of the celebrated Haller (*s*), who ſaw the ſame caſe "three "times, within fifteen months."

It is true that theſe are not all of them inſtances of the uterus being rup-

(*n*) Obſ 2. §. 4. & obſ. 3. §. 1. 2. 3. 4. 9. 10. 11. & obſ. 7. §. 3. & obſ 12. §. 2.

(*o*) Med. ſuper caſu rupt. in partu uteri, §. 5. & 11.

(*p*) Epiſt. Med. 25. & 45.

(*q*) Iſtoria d'un Feto & cæt. n. 15.

(*r*) Hiſt. a. 1724. obſ. anat. 4.

(*s*) De Rupt. in part. Utero obſ. n. 1.

tur'd, ſo that the fœtus burſt forth into the cavity of the belly; and could not be diſcharg'd by the mother, or extracted by the ſurgeon. Yet moſt of them are: and the others ſufficiently ſhow, how fatal either an incipient, or a perfect, rupture of the uterus muſt be.

As theſe misfortunes then are ſo frequent, it is not without reaſon, that ſome ſuſpect this ought to be plac'd among the other cauſes of the unexpected death of a woman, when coming on ſoon after delivery; eſpecially if death itſelf come on with thoſe ſymptoms, which Celſus (*t*) has given as the ſigns of the heart being wounded: for thoſe who die of a wound in the uterus, ſays he, "have the ſame ſymptoms as thoſe who die of a wound in "the heart (*u*)."

And if they die without bringing forth the fœtus, and conſiderable and ſtrong motions thereof have been previouſly perceiv'd, but upon thoſe errors I have mention'd being committed by the midwife, both the efforts of the fœtus, and of the uterus, have been ſuppreſs'd; and ſoon after the ſymptoms, I have referr'd to, ſhow themſelves in the woman; there is much more room for the ſuſpicion: although we are ſeldom at liberty to confirm it by diſſection, where even the moſt certain marks of the infant being dead with the mother, do not offer themſelves; as, for inſtance, the coldneſs of the arm, which moſt of them, who do not burſt forth, with their whole body, into the cavity of the belly, after the rupture of the uterus, are wont to thruſt out by the vagina; the coldneſs, I ſay, of the arm, an incipient kind of putrefaction, and other appearances of this kind; for the relations and friends, and particularly the huſbands, being averſe to the diſſections of their wives, do not ſend for the diſſecters, but undertakers; and deliver both mother and infant up to them; ſuppoſing them both to be dead already.

31. But as the cauſe of the uterus being ruptur'd, is frequently the oblique poſture of the infant, when he endeavours to extricate himſelf from his confinement; and as this obliquity generally happens from the obliquity of the uterus itſelf; I cannot help wondering, with Reimannus (*x*), how it happen'd, that, as the ancient phyſicians were ſolicitous about diſtinguiſhing, and curing, this diſorder of the uterus, it ſhould have been neglected in the latter times by moſt phyſicians.

He muſt have been very little converſant with Hippocrates, who is ignorant that he has ſpoken of "uteri being turn'd towards the groins, or the "pubes," or, on the other hand, backwards "towards the ſacrum (*y*)," or, "to the right, or left ſide," or "inclin'd to the hip (*z*)," or "having a "tranſverſe and oblique ſituation (*a*);" and, in like manner, that "the ori-"fices of theſe uteri" are made oblique at the ſame time (*b*); and, as we have hinted already on a former occaſion, that it is expreſsly ſaid, "if the "uteri become oblique, their orifices become oblique alſo (*c*);" to omit many other paſſages of the ſame author.

And not only in the age of Galen (*d*); but purpoſely to paſs over many ages, and many phyſicians, who follow'd him; when Joannes Mathæus de

(*t*) De Medic. l. 5. c. 26. n. 8.
(*u*) Ibid. n. 13.
(*x*) Eph. n. c. cent. 9. obſ. 79 in Schol.
(*y*) De Morb. Mulier. l. 2. n. 33.
(*z*) N. 35.
(*a*) N. 36.
(*b*) Ibid.
(*c*) De Nat. Muliebr. n. 34.
(*d*) De Loc. Aff. l. 6. c. 5.

Gradi (*e*), our Hercules Saxonia (*f*), Rodericus a Caſtro (*g*), and many others after them, flouriſh'd, midwives, and medical women, were order'd to inquire into the poſition of the os uteri, by the inſertion of the finger; that from thence they might diſtinguiſh to which ſide the uterus was inclin'd.

But if you compare Sennertus (*h*) with theſe authors, you will readily underſtand to how little the whole affair was already reduc'd; and how ſlightly it began to be touch'd upon. And if you look into Riverius, you will find that the treating of this diſorder was wholly omitted.

In our memory, this almoſt obſolete opinion was reviv'd by Deventer (*i*) in particular; and in ſuch a manner as to ſhow (which I do not remember to have been done by the ancients) of how much importance it is to diſtinguiſh the ſituation of the uterus in women in labour, from the ſituation of the os uteri; for that difficult births often happen from the obliquity of the uterus.

To this opinion I ſee that many eminent men have aſſented, and do aſſent: although ſome diſagree as to the cauſe of that obliquity. Thus in two diſſertations publiſh'd by two diſciples of the celebrated Friedius; one in the year 1736, the other eight or nine years after; I remember that this cauſe is plac'd in one ſide of the matrix being made heavier, on account of the placenta being fix'd to it; which does not happen frequently; and the fœtus being annex'd to that; juſt as Gradius (*k*) formerly, among the cauſes productive of obliquity in the uterus, plac'd this, if "by reaſon of the quantity of matter" in one part of it, "or by reaſon of an acquir'd gravity, a dragging of the other part, towards this, was brought on."

And even the obſervation which is the laſt of all added to this ſection of the Sepulchretum, ſeems to be conſonant to their opinion.

Yet the ancients ſuppos'd the chief cauſe to conſiſt in the contraction of the ligaments of one ſide; or even in the relaxation thereof: ſo that the ſound part was drawn to the contracted, or the relax'd part to the ſound.

And this opinion I am at liberty to transfer, from the adventitious diſorders of theſe ligaments, to thoſe which may alſo exiſt from the original formation; and this in conſequence of what I have ſeen in diſſections. For, in the autumn of the year 1706, I found the ligaments of the left ſide ſhorter than thoſe on the right, in a young virgin of Bologna; from whence the uterus inclin'd to the left ſide.

And nothing forbids us to ſuppoſe, that, if the uterus, from an original, or adventitious cauſe, be inclin'd to one ſide, in unimpregnated women, when they become pregnant it muſt hang to the ſame ſide; if nothing happens to prevent it. At leaſt it muſt, of courſe, hang to the ſame ſide for the firſt months of pregnancy.

And as it has increas'd with that inclination; although afterwards it raiſes itſelf up above the ligaments; it is moſt probable it will continue to be inclin'd to the ſame ſide, whereto it was before inclin'd. You therefore have

(*e*) Pract. tr. 4. c. 22.
(*f*) Prælect. Pract. p. 3. c. 11.
(*g*) De Morb. Mulier. l. 2. c. 17.
(*h*) Med. Pract. l. 4. p. 1. ſ. 2. c. 15. in princip. & c. 16. in fine.
(*i*) Obſ. Chir. novum lumen Exhib. Obſtetric.
(*k*) C. 22. cit.

many

many cauſes to which you may aſcribe the obliquity of the uterus, and fœtus.

Nor would I have you ſuppoſe that to be very rare, which I laid down in the laſt place; although you ſee that, as yet, there are not wanting thoſe who agree with de Graaf (*l*), when he aſſerts that the oblique uterus had been met with by him "ſometimes, though but rarely."

That this appearance has, at leaſt, not happen'd rarely to me, you will underſtand from my obſervations; eight of which I have already written to you (*m*), beſides that whereof I ſpoke juſt now, as taken from the young virgin: two or three I will give you at another time, as relating more to another ſubject: but I will here moreover add five; which I ſhall not readily find opportunity to introduce elſewhere.

32. A ſtrumpet, who was lame, of a ſmall ſtature, and aged forty years, was taken off within a few days, in this hoſpital, and in the beginning of March 1717, by an inflammation of the thorax. At this time I was wholly taken up in the anatomical examination of the parts of the belly; for which reaſon I inſpected only this cavity.

The abdomen, before I began the diſſection, ſhow'd many cicatrices from buboes. And when the cavity was open'd, the inteſtines were turgid with flatus; and, for that reaſon, appear'd remov'd from their more frequent ſituation.

That part of the ſmall inteſtines which lay neareſt to the thorax, had begun to be a partaker of this inflammation, as frequently happens: nor was the liver quite free from the ſame diſorder. The kidnies were enlarg'd, and in the pelvis of them was a kind of purulent urine. But the coats of the bladder were thick; and their internal ſurface unequal; perhaps from the lues venerea having infeſted the urinary organs, as is often the caſe.

One of the tubes of the uterus was agglutinated to the neighbouring teſticle; yet in ſuch a manner, as to correſpond with its free and unconnected orifice, to the part of that teſtis in which a large veſicle was included. The other part was not very ſound; ſo that for this reaſon, perhaps, that, otherwiſe very ſlender, ligament, by which it was connected to the uterus, had become thick.

The uterus, which was in other reſpects in a natural ſtate, inclin'd to one ſide; but whether to the left, or to the right, I have not committed to paper.

33. Notwithſtanding I have ſaid that this woman was lame, and one of them was lame in whom I ſhall hereafter deſcribe (*n*) an inclination of the uterus: although Galen (*o*) ſeems to hint that thoſe women, in whom is this inclination, have ſometimes "a pain that goes into the hip: and that the oppoſite leg is ſometimes lame in walking:" and Sennertus (*p*) tells us of a certain woman from Philaltæus, who was ſuppos'd "to labour under a ſciatica" for that reaſon; and Saxonia (*q*) conſider'd limping as a mark to which ſide the uterus inclines; and adds, that not only the lame limb, but

(*l*) De Mulier. Organ. c. 8.
(*m*) Epiſt. 29. n. 12 & 20; Ep. 35. n. 12 & 16; Ep. 40. n. 24; Ep. 45. n. 16; Ep. 47. n. 18 & 36.
(*n*) Ep. 56. n. 26.
(*o*) C. 5. ſupra ad n. 31. cit.
(*p*) C. 16. ibid. cit.
(*q*) C. 11. ibid. cit.

the upper limb alſo, on the ſame ſide, is, from his own obſervation, affected with a tremor and ſtupor; yet they either mean a much greater inclination than I found; or a tumour and pain of the uterus, which Galen (*r*) probably refer'd to, is join'd to the inclination; ſo that by theſe means there might be a preſſure and tenſion of the nerves which go to the leg, through the ſame ſide of the pelvis, and are connected with the nerves of the upper limb, by the intercoſtal. I at leaſt, in the greateſt part of thoſe women in whom I have ſeen the uterus inclin'd to one ſide, have not even obſerv'd a lameneſs in any, and ſtill leſs have obſerv'd the other ſymptoms that are mention'd.

And as to Hippocrates (*s*) having ſaid, "if the leg be made lame from "the uterus after delivery," that is, as he explains it himſelf, in another place (*t*), "from the uterus being inclin'd towards the hip;" Reimannus (*u*) will ſhow you how you may underſtand this, where he produces two inſtances of lameneſs ſeen by him after delivery.

I would alſo have you read the conjecture of Schoenmezlerus (*x*); who, having frequently heard lying-in women "complain of a violent pain in the "region of the larger trochanter, and in like manner a ſenſible drawing of "the ſame, towards the exterior, or poſterior parts;" and having obſerv'd that a virgin, who labour'd under a cancerous excreſcence of the vagina uteri, was troubled "with ſimilar, and even greater, inconveniences;" conjectur'd that the muſcle, which lies next to the uterus, on the internal ſurface of the pelvis; I mean the obturator internus; may in violent pains, and throes, of child-bearing, "be bruis'd, inflam'd, ulcerated, or in any other "way injur'd;" and by this means occaſion that pain, and drawing, in conſequence of its being terminated "in the notch of the great trochanter."

And, as you conſider theſe things in your mind, you will naturally conceive, that in the throes of a difficult birth, other muſcles, alſo, that lie near to the diſtended uterus in the pelvis, and particularly the iliacus internus, and that which is call'd the pſoas, may receive ſome injury; and that, as theſe muſcles go to the other trochanter, and raiſe the thigh, they may cauſe not only a pain, like that obturator in lying-in women, but alſo a difficulty of raiſing the thigh; which according to the different degree of injury is greater or leſs, or ſhorter, or of longer, continuance: for ſometimes it is even perpetual; as I have ſeen in a noble matron, who was my wife's mother; which lameneſs ſhe ſaid had been left after a difficult birth of that kind.

But whether this had taken its origin from the ſame cauſe, in any of thoſe we diſſected, I cannot now certainly remember. However; to return to the ſubject; I have alſo found the uterus inclin'd in ſome gibbous women: yet not ſo that the gibboſity was brought on by the inclination of the uterus, but on the contrary the inclination of the uterus by the diſtortion of the ſpine; as certainly happen'd in thoſe two of whom I ſhall immediately ſpeak.

34. A gibbous old woman was brought into the hoſpital, when her diſeaſe was ſo far advanc'd in its progreſs, that it was not in my power to learn

(*r*) C. cit.
(*s*) De Morb. Mulier. l. 1. n. 16.
(*t*) L. 2. n. 35.
(*u*) Schol. ſupra ad n. 31. cit.
(*x*) Commerc. Litter. a. 1736. hebd. 43. n. 2.

who

who ſhe was; for no ſooner was ſhe brought in but ſhe died. Wherefore I demonſtrated but very few things, from her body, to the pupils; and indeed ſo much the fewer, as I was furniſh'd with a very good male body at that time; from which I was teaching, in the theatre, about the latter end of January in the year 1748.

In the thorax I inſpected nothing elſe but the heart, which was in a natural ſtate; although it was furniſh'd with four coronary arteries, as I ſhall deſcribe on a future occaſion.

And in the belly, the kidnies had not a very ſound ſurface; ſo that I was leſs ſurpriz'd to find the bladder, in which there was a great quantity of urine, having its cervix well diſtinguiſh'd with ſanguiferous veſſels.

The right teſtis was ſomewhat turgid, juſt as if it had been the teſtis of a young woman; but it was diſtended by an hydatid of a conſiderable ſize, that was included in its body. And finally, the ſpine was diſtorted to ſuch a degree, that the uterus inclin'd to the right ſide; and the left iliac vein was twice as long as the right.

35. The kidnies, and genital parts, of another gibbous old woman, who had died in the hoſpital of a long-continued and very violent ulcer of the leg, were brought to me into the college; almoſt at the ſame time of year, but two years before.

The right kidney was of a natural form and magnitude. But the left, although it equall'd that in length, was ſo much leſs in width, that the appearance naturally occur'd to the eyes of every one immediately.

Whether this was owing to the ſpine being diſtorted towards the left ſide, at the upper vertebræ of the loins, I cannot determine, as I did not ſee the body myſelf. Below, however, it was certainly ſo inflected to the right ſide, that the uterus hung towards the ſame ſide: and this appear'd from the round ligament of the uterus on the right ſide, being much ſhorter than the left: for that I might be convinc'd of this ſhortneſs, thoſe who had taken the parts out of the body, had left the ſmall part of the abdomen, through which it came out from the belly, connected thereto.

36. Yet I have ſeen the uterus drawn to that ſide; by reaſon of one of the round ligaments being very ſhort; in three other women, whoſe hiſtories you have formerly receiv'd (*y*). And that I take notice of for this reaſon; becauſe, after Riolanus (*z*); who mentions only the broad ligament, which alone was probably ſhorter than uſual, in his obſervation of this kind; I ſee that others are not wanting, and among thoſe Weitbrecht (*a*), who ſuppoſe it to happen always from one of the ligamenta lata.

However, as I think that it ſometimes happens from the ſhortneſs of both ligaments, in one and the ſame ſide, or from the laxity of them in the other ſide; ſo I imagine that the ſame circumſtance may, at other times, be owing to the ligamentum latum only being ſhorter, if its fellow round ligament be very lax; or to the round ligament only, if the broad ligament be very lax.

But to the laxity of both the broad ligaments I attribute the falling back-

(*y*) Epiſt. 29. n. 12 & 20; Epiſt. 35. n. 16.

(*z*) Anthropogr. l. 2. c. 35.

(*a*) Syndeſmolog. ſect. 6. §. 41.

wards

wards, or forwards, of the uterus; as in the woman of whom I wrote to you in the forty-fourth letter (*b*); although in her the left muſt have been ſomewhat leſs lax, or leſs ſhort, as the uterus was ſomewhat nearer to the left ſide than to the right. Now take the remaining obſervations.

37. A woman, of about five and thirty years of age, had, not long before, had a vomica ruptur'd in the lungs, when ſhe gave ſuck. As long as ſhe could expectorate ſhe liv'd. But at length; her expectoration having ſtop'd for the ſpace of two days; ſhe died in the hoſpital, in the beginning of December in the year 1740.

As the body was not emaciated, and very proper for anatomical inquiries, moſt of the parts were diſſected and examin'd; except the thorax, which I purpoſely omitted opening; but none with ſo much care as the belly.

In this cavity then, ſome appearances were obſerv'd, that do not relate to the preſent ſubject; but among others were the following. The ſtomach, which was very long, before it reach'd to the antrum pylori, contracted itſelf to the extent of ſome inches; and ſoon after expanded itſelf into that antrum.

The inteſtinum colon was alſo contracted, in its beginning, to ſuch a degree as ſcarcely to exceed the thickneſs of a man's thumb. The ſmall inteſtines ſeem'd to be inflam'd as it were, in ſome places, on the left ſide; unleſs this might happen to be ſo from round worms, one of which was in the ſtomach.

The ſpleen was of a fleſhy colour internally; not black; and almoſt of its natural magnitude.

But the liver was large; extending itſelf into the left hypochondrium; and had its right lobe divided almoſt into two leſſer lobes, on its concave ſurface, by a deep and not ſhort fiſſure. I found the roots of the hepatic duct within the liver, which was, in other reſpects, ſound, much thicker than the thickneſs of thoſe that lay on the outſide of the liver, ſeem'd to require in proportion.

The ſurface of the kidnies was unequal in ſome places; yet they were ſound in their internal ſubſtance. In the cavity of the pelvis of the abdomen was a ſmall quantity of water.

The uterus was very much inclin'd to the right ſide; ſo that the tube, and the teſtis, being forc'd into a narrow compaſs in that part, had a much more extenſive ſituation in the other. Finally, the trunk of the vena cava being cut acroſs at the diaphragm, ſome black and coagulated blood flow'd down.

38. An old woman had her right leg bitten by a dog; after which an inteſtinal flux had come on, and a ſlight fever.

After many days the former ceas'd; but the latter continued. She was then ſeiz'd with a vomiting, by which ſhe threw up ſome worms. And at length her vomiting ceaſing, ſhe ſank by degrees, and died, in the hoſpital, about the beginning of March 1741.

This patient never had her pulſe ſtrong; yet ſhe had intermiſſions now and then: there was ſometimes a cough alſo, but this was ſlight. And why I

(*b*) No. 16.

added theſe two remarks, you will conceive naturally of yourſelf, when I tell you preſently what I obſerv'd in the heart, and about the lungs. For I not only examin'd the internal parts of the belly, but of the thorax and head likewiſe; and other parts beſides, of this very lean body, within a few days: and that very accurately.

When we were about to diſſect the brain, we obſerv'd air-bubbles in the veſſels of the pia mater: and under this membrane was water; as there was alſo in the ventricles, but not in great quantity, nor ſo as to make the choroid plexuſſes pale.

On opening the thorax, we found the lungs to be turgid with air; and about them were many bronchial glands, ſome of which were much enlarg'd, and contain'd a tartareous matter within them.

Both the ventricles of the heart were ſtuff'd up with polypous concretions, among which was a black blood; being themſelves of a white colour inclining to yellow; and ſome of them thick, and not eaſily to be pull'd aſunder.

The valvulæ mitrales were made up, at their lower part, of a compact and white ſubſtance internally; and particularly in that part which is neareſt to the great artery.

None of the valves of this artery were quite free from beginning oſſifications: and one of them, on the ſurface that was turn'd to the paries of the artery, was almoſt univerſally bony; and for that reaſon rough, and unequal, with particles which you would have ſaid were real bones; being here and there protuberant like grains of ſand, and ſome of them lying upon each other.

On the other ſurface, the corpuſcle which was reſtor'd by me, being pull'd away at the upper part, had degenerated into a fleſhy excreſcence, ſomewhat larger than itſelf.

In the belly, which we open'd firſt of all, the ſtomach appear'd to be ſomewhat tumid with air; being large of itſelf, and coming down ſo low, that the inteſtine colon, which lies beneath it, was below the navel. And the whole of this inteſtine; as in the woman laſt ſpoken of (*c*); except at its beginning, which together with the cæcum was turgid with air, had ſo contracted itſelf, that it ſeem'd to be one of the ſmall inteſtines. On the other hand, the duodenum was much larger than it generally is; and moreover paſs'd downwards, over a very long tract of vertebræ, on the right ſide. The other ſmall inteſtines were of a pale and livid colour.

The glands of the meſentery were not very ſmall, but of a middle ſize; being ſenſible both to the ſight, and touch, under a ſmall quantity of fat.

The liver was large: and in it two furrows, as if made by a ſtrong impreſſion of the fingers, deſcended in a ſituation almoſt parallel to each other: and that from the upper part of the convex ſurface, to a conſiderable tract in the anterior direction.

The ſpleen was thicker than is natural; and on its gibbous ſurface ſomewhat rough, with a kind of whitiſh granules, and of a pallid colour internally.

(*c*) N. 37.

Finally,

Finally, the uterus was inclin'd to the left ſide, and had its whole internal ſurface rough; but not ulcerated, although cover'd over with black blood; the whole internal ſurface, I ſay, of the fundus, but not of the cervix; although the corona of the oſculum uteri was ſomewhat thicken'd.

39. Nor am I wanting in other obſervations, beſides thoſe that I have promis'd, of the the uterus being inclin'd to one ſide; but from a tumour in the oppoſite ſide.

Theſe, however, are ſufficient, at preſent, which I have added to the eight already given you in former letters; firſt to ſhow you that the obliquity of the uterus is not very rare; and in the ſecond place, that by comparing them all, one with another, you may know whether this, as ſome ſeem to believe, happens more frequently on the right ſide, or not leſs frequently on the left.

I have not leiſure here to examine the obſervations of others. But out of the two, however, which I remember to have read in the Sepulchretum; the one of Joannes Riolanus (*d*), the other of Franciſcus Sylvius (*e*); the former deſcribes it as being towards the right ſide, and the latter towards the left.

And finally, by comparing all our obſervations together, you will naturally collect this remark: that the women, in whom this diſorder of the uterus was found by me, had not complain'd of thoſe violent ſymptoms, which Ruyſch (*f*) ſuppos'd to be the effect of a lateral inclination of the uterus; I mean a pain of the hypogaſtrium, a very frequent effort of expulſion, a continual deſire of making water, or at leaſt not a very quick and eaſy diſcharge of the urine; notwithſtanding in ſome of them this inclination was far from being inconſiderable, and the frequent interrogation of phyſicians was not wanting, in order to diſcover every complaint wherewith they were troubled.

And indeed the figure of Ruyſch's (*g*); in which the inclin'd uterus is repreſented; does not ſhow that part of the vagina which is annex'd to it; and to which we know that the beginning of the urethra cloſely coheres; to be ſo inclin'd, as would be neceſſary in order to account for thoſe diſagreeble ſymptoms in diſcharging the urine, that Ruyſch has attributed thereto.

But of the obliquity of the uterus enough.

There is a rare obſervation of contorſion being added to obliquity, which may be read among the hiſtories that are in the latter part of the excellent diſſertation of Rudolphus Jacobus Camerarius (*h*). For the uterus was found "ſo inclin'd to the left ſide, that the anterior part of the fundus "ſeem'd to be diſtorted, towards that ſide, at the ſame time."

And this contorſion was, as is ſaid ſoon after (*i*), "conſpicuous; and by "contracting the orifice of the uterus, perhaps impeded the birth at the ſame "time;" particularly of the fœtus, which was not properly plac'd, was larger than the uſual ſize, and in a mother who was ſmall, and in like manner fat.

(*d*) Sect. hac 38. obſ. 9. §. 8.
(*e*) Sect. 10. libri hujus 3. obſ. 28.
(*f*) Cent. obſ. Anat. Chir. 88.
(*g*) Ibid. fig. 69. *
(*h*) Specimen. Experimen. circa Generat. Hiſt. 1.
(*i*) In Schol.

You ſee how many cauſes of unſucceſsful birth, may ſometimes come together, at one time. But there are ſtill others; as when the cervix uteri is ſhut up by ſome excreſcence: which was the caſe in the woman whoſe diſſection we have in the hiſtory of the Royal Academy of Sciences at Paris (*k*): or when the os uteri is almoſt of a cartilaginous hardneſs, ſuch as it was found to be in a woman not yet forty years of age, by the celebrated Helmſtad profeſſor, Fabricius (*l*); nor did he think it was without reaſon that he reckon'd it among the other cauſes of a difficult and preternatural birth, as giving very great reſiſtance to the dilatation neceſſary for delivery: or when the funiculus umbilicalis is much ſhorter than it generally is, and is an obſtacle to the efforts of the fœtus, in endeavouring to extricate itſelf; or if theſe efforts are very ſtrong, is apt to produce an untimely ſeparation of the placenta; and even is apt itſelf to be broken aſunder.

Thus you will ſee, in how much danger both mother and fœtus were, when a funiculus "ſcarcely ſix inches long," was ſeen by the celebrated Stegmannus (*m*).

But out of the other cauſes of difficult birth; ſince they are almoſt innumerable, and we have a great number of different cauſes ſtill remaining; it will be proper to ſpeak of one, which is a very common one among the principal of theſe cauſes.

40. This is the fœtus when dead in the uterus: which firſt creates this difficulty; to make it very doubtful, whether it be really dead.

There were, formerly, ſome who acquieſc'd too eaſily, as melancholy examples have taught us, in certain ſigns of the death of the fœtus; and if the meconium, for inſtance, flow'd down through the pudenda of the woman in labour, they did not heſitate to pronounce that the fœtus was already dead. The fallacy of which ſign, not only others, in other places, but I myſelf have very evidently found here, in the year 1730.

The wife of a tradeſman, who was about nine and twenty years of age, having drunk water inſtead of wine, almoſt in general for the ſpace of three years; and having come to the regular period of her fifth or ſixth pregnancy with good omens; diſcharg'd ſo great a quantity of waters, at one and the ſame time, from her genitals, that every one was ſurpriz'd at it; but not ſhe herſelf.

For ſhe knew that ſhe had drunk much more water in this pregnancy than uſual; and that leſs had been diſcharg'd by the urinary paſſages for the laſt month than uſual.

She was ſurpriz'd however, as the infants had always hitherto immediately follow'd the effuſion of the waters, together with their ſecundines, and the births had been very happy; notwithſtanding the children had all ceas'd to live within fifteen day; ſhe was ſurpriz'd, I ſay, that her waters having been diſcharg'd on the preceding day in the morning, which was the eighteenth of February, another day had now come on, and nothing had been diſcharg'd beſides a watery humour, which ſtill continu'd to flow; when behold! on the ſame morning, the meconium began to flow together with that fluid.

(*k*) A. 1705. obſ. anat. 7.
(*l*) Progr. Acad. edit. a. 1750. m. Januar.
(*m*) Eph. n. c. dec. 3. a. 4. obſ. 113.

Wherefore, in the afternoon I was ſent to, and deſired to go and ſee her, and conſult with her phyſician upon the caſe.

Upon hearing that this gentleman intended to do, and to give, ſuch things, as he hop'd would bring back the pains, and efforts, of the uterus, that were gone off; I told him, that I thought the firſt inquiry to be made, was, whether the fœtus was diſpos'd in ſuch a figure, as is requir'd in a natural ſtate; from which, I fear'd, if it were living, it was far diſtant: and what made me fear this was the diſcharge of the meconium.

I inquir'd what was the report of the midwife. And was anſwer'd that ſhe, as far as could be judg'd from the examination of the abdomen of the mother, ſuppos'd the fœtus to be plac'd tranſverſly. But that it was alive the mother did not doubt, as ſhe thought ſhe had heard it cry. But let us, ſaid I, paſs by this notion of the child's crying, which is an uncertain ſign.

Yet why was not the former which confirm'd my opinion (for the anus of the infant being turn'd towards the vagina, and the parts adjacent to the anus being probably compreſs'd, the inteſtinal excrements might be forc'd out, even before the infant breath'd) aſcertain'd to the midwife by the introduction of her fingers? The mother, ſay they, refuſes to ſubmit to it.

But what, ſaid I, if it ſhould be neceſſary to introduce the hand into the uterus, and extract the fœtus; after having firſt turn'd it to a more proper poſition, if that ſhould be neceſſary. And if her mind cannot be now influenc'd; you may take it for granted, that unleſs the midwife is deceiv'd, or the figure, which ſhe has ſpoken of, is chang'd to a better, the infant will not be born, at laſt, without the aſſiſtance of a ſurgeon, which may perhaps be too late.

One or other of theſe ſuppoſitions muſt have taken place. But whichſoever was the caſe; they ſaid that the poſition was afterwards chang'd, and that the pains of labour coming on, the infant was, at length, born in its natural figure; though not without great difficulty on account of its magnitude.

This however is certain, and what relates chiefly to the point in queſtion; that the child was not born before the eighth hour of the following day, and was ſtill alive: that is at leaſt fifteen hours from the time in which, being in the uterus, it had begun to diſcharge its fæces: and it even liv'd a little while after the birth; ſo as to make it very evidently appear, that this diſcharge is a deceitful mark of the fœtus being dead.

And I have given you this relation, becauſe it is only by inculcating ſtill other and other obſervations, from time to time, that theſe errors, and prejudices, can be rooted out from the minds of weak women and common people.

For it does not eſcape me, as I ſaid above, how often the ſame thing has been before: and indeed; to omit other examples; one of the hiſtories juſt now mention'd (*n*), when I took notice of the diſtortion of the uterus, will plainly ſhow you, that a girl was born living, healthy, and briſk on the fifth day after the meconium was diſcharg'd.

Nor is it only that ſome compreſſion; eſpecially of the belly, which eaſily

(*n*) N. 39.

happens

happens when the body of the fœtus is not folded into the moſt ſuitable poſture; but that either the greater quantity of fæces, which are then almoſt fluid, or the acrimony of them, by irritating the inteſtines; may overcome the power and reſiſtance of the circumjacent ſphincter, which at that time are but ſmall.

And muſt it not happen, that this power of the ſphincter is ſometimes almoſt nothing at all; and not only by reaſon of the great infirmity and weakneſs of the fœtus, but by reaſon of a paralyſis? And it concerns phyſicians; who are not willing to be deceiv'd, even by many other ſigns that are generally ſuppoſed to argue the death of the fœtus; to remember with carefulneſs, that the ſtrength, and retention, of the fœtus, may be ſoon after reſtored; as after a ſyncope, by cheering and comforting the fœtus together with the mother; or if not wholly reſtor'd, at leaſt in great meaſure.

Suppoſe, by way of another example, that there is no pulſation in the umbilical rope, and even none in the arteries of the fœtus. It is, without doubt, certain that the fœtus is alive, if a pulſe is really perceiv'd. I ſaid really; for what Lanciſi (*o*) relates to have happen'd in reſpect to a man of the firſt rank; that, in his wriſt after death, I know not who contended there was a pulſe, which in fact was no where except in his own fingers; I fear may much more eaſily happen to a ſurgeon, who, in order to inquire into this circumſtance, has introduc'd his fingers, after being heated within the warm parts of the woman, and by the operation itſelf.

And I commend thoſe, who, in order to avoid this fallacy, have admoniſh'd the ſurgeon, that he, at the ſame time, compare the number of pulſes perceiv'd by him, with thoſe of his own at the wriſt; which ſhe muſt take care to have obſerv'd by ſome other perſon; ſo that if the numbers exactly coincide, he may be ſure he is deceiv'd: but if on the contrary, that he is not deceiv'd.

Yet although that which we have ſaid is certain; it does not immediately follow, that the fœtus is dead, if there is no pulſe: for the ſtrength of the fœtus may then be very languid, but ſoon after return.

And neither the fatal deficiency of pulſe, nor the coldneſs, nor lividneſs, of the funiculus, nor of a limb of the fœtus hanging out of the uterus, give a ſufficient proof of the child's being extinct: for they may be ſo conſtricted within the narrow paſſage of the contracted os uteri, that if a gangrene even begins to affect the limb, and the cuticle begins to be ſeparated from it; though it is very evident that the life of the infant is in very great danger, yet that life is entirely extinguiſh'd, is by no means certain and evident.

And indeed at Breſlau, although the arm of the infant was hanging out "in a livid and cold ſtate," ſo that it was judg'd proper to amputate it, as if the fœtus were without doubt dead; yet this fœtus was born (*p*) "on "the third day and living."

41. However, where either the very ſeries of evident cauſes, and circumſtances, or the greater part of the ſigns, and thoſe ſuch as are to be depended upon, or at leaſt of the moſt importance; of which kind are the very eaſy ſeparation of the cuticle from the head, a humour of a cadaverous ſmell diſ-

(*o*) De ſubit. mort. l. 1. c. 16. n. 8. (*p*) Eph. n. c. cent. 3. obſ. 57. in fin.

tilling from the uterus, and other ſigns of the like kind; where theſe ſymptoms, I ſay, have induc'd the more ſkilful phyſicians, and ſurgeons, to ſuppoſe, with unanimous conſent, that the infant is dead within the uterus; another difficulty naturally ariſes: that is, whether it is better immediately to extract it with the hands, or to make uſe of other remedies previouſly thereto.

I remember, that, when I applied to the ſtudy of phyſic at Bologna, it happen'd to two illuſtrious matrons, in one and the ſame year, that they could not bring forth their children; and as the fœtus of each of them was ſuppos'd to be dead, that in one it was taken away by the hands of the ſurgeon; but in the other, that, by patience, and waiting, and particularly by the uſe of a clyſter, that was emollient and ſtimulant at the ſame time, the fœtus was diſcharg'd; the former mother dying ſoon after, but the latter being ſav'd.

Although the gentleman who had been phyſician to both of them, a very learned man, gave his reaſons, why, in the former caſe, he thought it neceſſary to haſten the event, and why in the latter there was room to wait; yet he did not get praiſe, from the recovery of the one, equal to the reproach he got by the loſs of the other: reproach that was in my opinion unjuſt, but prevail'd even among phyſicians and ſurgeons of eminence.

And although it is not at all to be doubted, but it becomes phyſicians to act differently according to different circumſtances; yet it is ſcarcely poſſible to avoid cenſure, unleſs you act in conſequence of the unanimous opinion of the moſt celebrated phyſicians, in the uſe of every doubtful remedy: and eſpecially if it happen, as in this caſe, that the aſſiſtance of a ſkilful and experienc'd ſurgeon is wanting.

Nor is it ſufficient to ſave the patient, we muſt alſo ſee that no injury is done to the uterus.

I was conſulted ſome years ago, for a gentlewoman, who, after four very ſucceſsful births, had had occaſion, in the fifth, for the aſſiſtance of a ſurgeon; who having it in his power to extract the infant eaſily by the feet, (which he ought to have done) as it preſented with them, puſh'd them back nevertheleſs; and while he was endeavouring to turn the head to the orifice of the uterus, and extract the fœtus by laying hold of it, he teaz'd the woman, who was, in other reſpects, of a delicate habit, ſo long and ſo violently, that not only an inflammatory fever, which brought her almoſt to death's door, was excited; but alſo, in the three following times of child-birth, the infants never preſented themſelves with the head, but always thruſt out the hand: and it is very ſuppoſable that this was owing to an injury being done to a certain part of the uterus, which prevented it from ſuſtaining, or expelling, them equally, on all parts; and was thereby the cauſe of a preternatural poſition.

For which reaſon, if there is nothing that requires haſte, and the poſition of the dead fœtus is not bad, the greater time is, in my opinion, to be given to the woman, and to nature; that the latter may excite the efforts, and pains, of child-bearing, and the former, by collecting her ſtrength together, may contend, with all her might, to deliver herſelf of her burden: and it is ſome-

times of uſe, to aſſiſt the endeavours of the mother a little, by applying cautious and ſkilful hands to the belly.

But becauſe nature is ſometimes very ſlow in promoting thoſe pains, or does not excite ſuch as we would wiſh; but rather convulſive pains, which are diametrically oppoſite to our purpoſe; it will be our buſineſs to appeaſe the latter in time, and to promote the former, if that is really in our power.

I remember I was call'd to a woman in labour, who; having been now troubled with this bad kind of pains, that I have ſpoken of, for the ſpace of two days; could neither get any ſleep, nor retain any aliment; but was oblig'd to throw every thing up by vomiting.

Having, therefore, given this woman half a grain of opium, before her ſtrength was quite exhauſted; ſhe began at once to retain her aliment, and theſe convulſive pains were at the ſame time appeas'd: ſo that the true labour-pains coming on ſoon after, and the orifice of the uterus, which had been kept in a conſtricted ſtate by the former, being open'd, the child was happily brought forth.

And in ſo doing, I rejoice not only that I follow'd the method of Deventer *(q)*, which I then knew, but alſo the practiſe of that excellent phyſician Richard Mead *(r)*, as I now ſee.

But in the other caſe of which I ſpoke, wherein nature is very ſlow in exciting proper pains, ſhe is firſt to be aſſiſted by clyſters, contriv'd for that purpoſe, and unctions applied to the abdomen; as far as it is poſſible to do it thereby: then, if theſe are not ſufficient to anſwer the purpoſe, by giving ſomething of the ſame kind internally, which may invite rather than ſtimulate nature; avoiding every thing that can agitate and create danger.

You will perhaps laugh at me, if I tell you what I know, from the moſt authentic informations, to have happen'd in the country about Padua, ſome years ago.

A woman could not bring forth. A ſurgeon in the village where ſhe liv'd, ſent four ounces of the oil of leucoion luteum vulgare, wherewith to anoint the belly as uſual. The ruſtic and ignorant women, who were about her, ſuppos'd it to be ſent in order to be taken inwardly; and immediately gave it her to drink. And by this means ſhe was deliver'd.

The ſurgeon, taught by this caſe, gave the ſame quantity of the ſame oleum cheyrinum; as they call it in the ſhops; to three or four other women; who were in a like difficulty; and with a ſimilar ſucceſs.

After this it was given to a woman at Padua in my knowledge, who could not bring forth her dead fœtus; and by this means the head of the infant deſcended ſomewhat lower: although, by reaſon of the great magnitude thereof; to which the lower circumference of the pelvis was not equal; it could not be deliver'd without the aſſiſtance of a ſurgeon.

That the flowers of the leucoion are given, by phyſicians, to promote the diſcharge of the menſes, the fœtus, and the ſecundines, is extremely well known. But that the oil, in which theſe flowers have been macerated, had been given, I do not remember: nor is it to be wonder'd at; as ſo many things leſs unpleaſant are ſuppos'd to anſwer the ſame purpoſe.

(q) I. ſupra ad n. 31. cit. c. 17. 26. 50. *(r)* Monit. medic. c. 19. ſect. 5.

However,

However, it will not be altogether uſeleſs, to have taken notice of this alſo, if any one ſhould happen to ſuppoſe, either that the force of the leucoion, whatever it may be, is temper'd by the oil; or rather, that, when this force is in action, it is properly mitigated at the ſame time; if any thing requires mitigation, as I juſt now ſhow'd in the convulſive pains.

42. As to what I have ſaid above (*s*); that we may wait, if no occaſion preſſes; I would have you underſtand it in ſuch a manner, as to ſuppoſe it allowable, if no ſigns of a putreſcent fœtus begin to appear; which ſigns come on the ſooner, where the waters are diſcharg'd: for the air enters, thro' the ruptur'd membranes, to the dead body, and brings on ſuch a corruption; which, although it even attacks thoſe carcaſes of the fœtuſſes, that are not expos'd to the contact of the air, yet attacks them, for the moſt part, much later, and without any acute fever of the mother: and this you will underſtand, from the hiſtories which give you the relation of the bones of fœtuſſes, conceiv'd long before, being diſcharg'd, either by abſceſſes of the abdomen, or by the anus; the mother for the moſt part being ſav'd.

And theſe hiſtories have grown out to ſuch a number, from the time in which Albucaſis produc'd his (*t*), that although they are collected by more than one author, there are ſome which we could wiſh had been added; and many are wanting which were not extant at that time.

One of theſe, in my opinion, is that which Dominicus de Marinis (*u*) publiſh'd, from his own obſervation, in the year 1667; the cranium of whoſe fœtus, as well as the other bones; that had been excreted by the anus of the mother; were preſerv'd by Guilielmus Riva.

And there are not a very few of theſe, which even Italy alone has offer'd in our memory. For; to omit the fœtus, which was extracted from the rectum inteſtinum of a woman, by that induſtrious ſurgeon, at Venice, Nicolas Patuna, and ſent to me by him, in order to be examin'd; concerning which both he himſelf (*x*) and Santorini have written (*y*); the ſame Santorini (*z*) has made mention of a woman; in the territories of Padua, and perhaps living at this time; who had diſcharg'd the bones of a fœtus by the ſame way: and that celebrated man Franceſco Serao inform'd me, by letters dated at Naples, about the end of the year 1739, that the bones of an infant had been diſcharg'd by another woman, not long before, from the ſame place.

And that at Breſcia, and Vercelli, the bones of other fœtuſſes have been, in this our age, taken out from abſceſſes of the abdomen, our Valliſneri (*a*), and the celebrated Fantonus (*b*), have aſſerted.

And, without doubt, there are other obſervations of this kind, among my countrymen in this age; the knowledge of which has not come to me: or if it has come, I do not at preſent remember them.

But as there is ſcarcely any thing in the medical art, which is not liable to exceptions; therefore I have ſuppos'd, that what I ſaid juſt now, of putrefaction coming on very late, if the air does not enter; and very ſoon if the air does enter, and in a very dangerous manner; was for the moſt part,

(*s*) N. 41.
(*t*) Chirurg. l. 2. c. 76.
(*u*) Diſſert. de re monſtroſa per urinam excreta.
(*x*) Relaz. int. al cadav. d'un Feto & cæt.
(*y*) Inſt. d'un Feto &c.
(*z*) Ib. n. 31.
(*a*) Iſtoria della generaz p. 2. c. 17. n. 17.
(*b*) De obſ. med. & anat. epiſt. 7.

but not always true; being induc'd to be of this opinion by many obſervations, but particularly by two that were publiſh'd in one and the ſame year (*c*), by thoſe celebrated men Reuſnerus, and Nebelius.

For one of them ſpeaks of a fœtus, of five months, being dead in the uterus; the ſame being diſcharg'd after no more than twenty weeks, " with " a moſt filthy odour;" notwithſtanding, by reaſon of the ſecundines, and the waters, being retain'd at the ſame time, no acceſs was given to the air.

And the other gives the relation of a mature fœtus, which was endeavouring to procure its own diſcharge at the proper time; but, after the efflux of the waters, gave the more certain ſigns of its death, as, in the following weeks, " a fœtid and bloody ichor, with little pieces of membranes, and " fleſhy fibres, flow'd out from the pudenda:" and finally, this fœtus was reduc'd to a ſceleton; ſo that the crackling of the bones was heard, as often as ever the woman bent her body backwards, or forwards: yet ſhe, being afflicted with no fever that is mention'd, nor any other conſiderable inconvenience, had even carried thoſe bones in the uterus, " for three years together, " without any loſs of health."

And I could wiſh, that, as many dead fœtuſſes, beſides thoſe I have mention'd, have long made their ſepulchres within the belly of the mother; ſo, many living infants might not be buried together with the dead mother; but were taken out in proper time from her carcaſe.

For while the ſurgeon is ſought after to open the body, while he is call'd and coming, the fœtuſſes that were living, and eſpecially the more weakly, frequently die; the women, and even many men, equally rude, and full of ignorance with themſelves, taking care to keep the mouth of the mother open: whereas, they ſhould rather take pains, with ſome hope of utility, that the body of the mother, and particularly the belly, may be kept warm; which not only reaſon itſelf ſufficiently argues for, but is likewiſe confirm'd by the experiment of Stalpart the ſon (*d*), on the fœtuſſes of dogs.

For having put them into warm water, wrap'd up in their membranes, he found a pulſe in them even after ſome hours.

And indeed, upon opening the belly, and uterus, of an illuſtrious matron of Sileſia (*e*); who had been dead four hours before the ſurgeon came; a living child was found: the perſons who were about the deceas'd mother, not having omitted to foment her abdomen continually, till he came, " with " ſpirituous fomentations, with the balſamum embryonum, with generous " aromatic wine, with warm flannels, and the like;" without being in the leaſt deter'd therefrom, as I ſuppoſe, becauſe they perceiv'd no motion in the uterus.

For otherwiſe, the writer of the obſervation would ſcarcely have ſubjoin'd the following words, which are frequently true: " for the fœtus is moſt ge- " nerally alive; notwithſtanding there is no evident motion."

43. But in regard to women in labour, I have ſpoken ſufficiently. Let us now add a few things, alſo, in regard to women after delivery. And to this ſubject relates the obſervation which I made, on the twelfth of Auguſt, in

(*c*) Eph. n. c. cent. 5. obſ. 11. & cent. 6. obſ. 52.

(*d*) Exercit. de nutrit. fœtus §. 41. in fine.

(*e*) Eph. n. c. cent. 3. obſ. 57.

the

the year 1707, together with my very learned Venetian friends; and in particular Santorini; and which I have ſpoken of, more than once, in the fourth of the Adverſaria *(f)*. Now take the whole of the obſervation.

44. A woman, who was ſubject to hyſterical diſorders, and had a bad colour in her face, being already the mother of ſome children, and again in a ſtate of pregnancy; had an apprehenſion that the next birth would be fatal to her.

And, at the time of her labour, ſhe actually began to ſwell in her fingers and abdomen: and ſoon after, having brought forth a girl inſtead of a boy, which ſhe had hop'd for; and by reaſon of a kind of wager, ſhe would much rather have prefer'd; and this circumſtance of the ſex, though cautiouſly conceal'd from her by the women who attended, being imprudently reveal'd to her by her huſband; ſhe was ſeiz'd with ſuch an anxiety of mind, that her pulſe immediately ſank, and her body became cold.

It was then ſcarcely an hour, from the time the girl had been born; and except ſome part of the membranes, which the healthy and lively girl had drawn with her, nothing of the ſecundines had been diſcharg'd: either becauſe the placenta adher'd very cloſely, or becauſe the midwife had judg'd that ſhe ought to wait for the aſſiſtance of nature; as ſhe remember'd that her own grand-daughter had formerly diſcharg'd the retain'd placenta, on the tenth day after the delivery of the child.

As, therefore, neither pulſe, nor heat return'd; within an hour and a half from the time that they began to be deficient, death ſucceeded: the flux of blood from the uterus; which you will be ſurpriz'd at in this defect of pulſe; continuing in its uſual ſtate till the very laſt extremity of life.

We open'd the body at the twenty-fourth hour after death. From the mouth, and noſtrils, of the carcaſe, a great quantity of ill-ſmelling water was diſcharg'd. The tumour of the belly was ſo great, that I do not remember to have ſeen a larger, even in patients with an aſcites.

And this tumour did not ſubſide very much, when the peritonæum was open'd; for it was then found to be chiefly owing to the ſtomach, and inteſtines, being diſtended with air, in a ſurprizing manner; and to the uterus that lay beneath them, which not only occupied the whole pelvis by its rotundity of bulk, but even exceeded that dimenſion.

Before we cut into the uterus, together with all the appendages connected to it, we obſerv'd a bloody water to be effus'd into the cavity of the abdominal pelvis. And we had before obſerv'd the veſſels, which are under the ſkin of the thighs, near to the pudendum, to be fill'd with blood: and the bones of the pubes, where they are join'd to each other; having been examin'd, before diſſection, with the finger, and having ſeem'd to gape, or at leaſt to be very laxly join'd together; had their commiſſure ſcarcely touch'd with the knife, before they were ſeparated from each other; ſome fluid being, at the ſame time, diſcharg'd.

And nearly the ſame things appear'd to us ſoon after, when we examin'd the juncture of the ilium with the ſacrum; ſo that we believ'd thoſe not to have been far wide of the truth, who have aſſerted, that, not only in women

(f) Animadv. 26. 27. 39. 43. 45.

in

in their firſt time of child-bearing, as Hippocrates has taught us (*), but ſometimes, alſo, in a birth which is not very laborious, " the coxendices are " ſeparated."

Lifting up the uterus, after taking it out, we ſaw that a very large maſs of concreted blood was diſcharg'd through the orifice of the vagina. Scarcely any thing of the nymphæ appear'd; probably in conſequence of their having given way, and been extenuated, in the birth, in order to prevent the neighbouring ſkin from being lacerated; ſo that they would ſoon after appear in their former ſhape.

Thus our Fabricius ab Aquapendente (*g*); before he cut into the membrane which ſhut up the orifice of the vagina in a virgin, and was diſtended with a very great quantity of blood, which lay upon it; remark'd that there was no appearance of the nymphæ: yet theſe he preſently ſaw form'd, when the membrane was incis'd, and the tenſion taken off.

From hence; if things are always in the ſame ſtate after delivery, as Dionis (*b*) hints; you may conjecture at one of the uſes of the nymphæ.

While we were looking at the external parts, I ſhow'd to my friends, the lacunæ which I had ſpoken of in the firſt of the Adverſaria (*i*) in the former year; preſſing out, at the ſame time, a whitiſh humour, and a conſiderable quantity of it, wherewith, in this woman, they abounded.

Soon after I alſo obſerv'd, and demonſtrated, the lymphæducts of the uterus; as I likewiſe did the ſtructure of the corpus luteum, in one of the teſtes.

But of theſe, and, in regard to the round ligaments of the uterus, how great a thickneſs they had, on account of the veſſels, whereof they are in great part made up, being diſtended with blood; and, in regard to the uterus itſelf, of what fibres and ſinuſſes it conſiſted, and how large theſe were, together with the external blood-veſſels; and alſo, of the largeneſs of the oſculum uteri, and of the dilatation of the cervix uteri, not being leſs than that of the fundus itſelf; and finally, of the very frequent orifices in that oſculum, and the mucous glands in the lower part of the cervix; of all theſe, I ſay, I have already written what is ſufficient, in the fourth of the Adverſaria (*k*).

Now, if there be any thing which had no place there, it muſt be added, that you may have the whole of the obſervation as I promis'd.

Both of the teſtes had a kind of ſmall foramen on the ſurface, through which a ſlender probe was admitted into the internal parts. And in that ſame teſtis, wherein was the corpus luteum, was a roundiſh bony cell; and in the cavity of it a bloody humour. The tubes were longer than they generally are.

The parietes of the vagina were extenuated, and itſelf was become much wider than its natural dimenſions allow; but not at all ſhorter: ſome rugæ only correſponding with the corpus glandoſum urethræ.

The oſculum uteri was of a red colour, degenerating into black; and

(*) De Nat. Pueri n. 43.
(*g*) De Chir. Operat. ubi de Hymene Imperfor.
(*b*) L'Anat. de l'Homme Demonſtr. 4. ſect. 2.
(*i*) Tab. 3.
(*k*) Animadv. ſupra ad n. 43. indicatis.

in ſome places lacerated. Within the cervix were no little chords prominent, nor ſmall membranes.

It was evident that the placenta had adher'd to the upper part of the fundus uteri, in ſuch a manner, as to cover the orifices of both tubes. And the ſame adher'd in ſome meaſure even then. But where it had adher'd, there the orifices of the uterus were extremely contracted; where it did now adhere, there they were large; as was with great truth ſaid in thoſe Adverſaria, as the other circumſtances were: which I here confirm for this reaſon, leſt, to thoſe who have not yet happen'd to light on any ſuch things, they may ſeem to be *paradoxes* in a different ſenſe from that in which the Greeks had been us'd to underſtand this word. In the ſinuſſes, with which thoſe orifices communicated, was no blood.

Finally, in the thorax; for we never touch'd the head; both lobes of the lungs were univerſally of a white colour degenerating into livid, if you except the poſterior parts where the blood had ſubſided in the ſupine poſture of body. The heart was flaccid beyond deſcription, and contain'd ſcarcely any blood in the auricles and the right ventricle; and in the left ventricle none at all.

45. That a great quantity of blood had flow'd out from the uterus, by reaſon of the placenta being looſen'd in part, I would not deny; but whether it was diſcharg'd in ſo great a quantity as to kill the woman, may perhaps with reaſon be doubted.

For, on inquiry from the women who were about her, we could not learn that a very great quantity had been diſcharg'd; and ſome of the veſſels were diſtended with blood even after death, as I have told you above: ſo far were they from being "almoſt void of blood," as the celebrated Tabarranus (*l*) found them, in women who died of floodings, a few hours after delivery: then the pulſe and the heat did not decreaſe gradually before, but ſuddenly, and altogether, at that very inſtant of time, when this diſagreeable circumſtance was related to her; for nothing of this kind is proper to be told to women in theſe circumſtances, and leaſt of all to thoſe, who, being ſubject to hyſteric affections, have their nerves prone to convulſions; which, if they ſeize upon the noble viſcera, eaſily deſtroy the weaker and more delicate kind of women: and this you will find to have happen'd to a woman, who, being fatigued by preceding labours, and wearied by a difficult birth, was, ſoon after this, and at the very time ſhe was ſpeaking, contrary to all expectation, ſuddenly ſeiz'd with a convulſion and death; whereas the celebrated Jo. Sebaſt. Albrechtus (*m*) could ſuſpect no other cauſe for this change, but diſagreeable news, which was heard by the patient at that time.

Nor did it ſeem to all thoſe learned phyſicians; who not only heard, with me, the relation I have given you, but were alſo preſent at the diſſection; that the death of this woman had been owing to any other cauſe.

But before you judge, I would have you attend to this circumſtance alſo; I mean into how great a tumour, and that a flatulent one, the belly of the woman had increas'd.

(*l*) Obſ. Anat. n. 36. (*m*) Act. n. c. tom. 4. obſ. 50.

And

And you have, even in this ſection of the Sepulchretum; that is in the thirty-eighth; ſome obſervations wherewith you may compare this of mine.

In the firſt place the fifth, which, through careleſſneſs, is repeated under number thirteen, of a woman, who, having died ten hours after delivery, had her whole belly tumid with flatus, is ſomewhat ſimilar. But as it is ſaid that her uterus was full of coagula, and many evacuations are mention'd; juſt as it is ſaid, by Euſtachius (*n*), that in the Roman matron, in whom the proper membrane of the kidnies was ſo diſtended with included flatus as at firſt to have the appearance of a large tumour, a great quantity of blood was diſcharg'd after delivery; at leaſt turn to the fourth, and ninth, of thoſe obſervations, that are added in the appendix.

Neither of theſe mention a hæmorrhage; but both of them deſcribe the belly as having been diſtended within a very little time after death, with flatus, above what can eaſily be imagin'd.

Yet if you ſay that theſe women died in labour, and not after they had brought forth; and that the firſt of them had already carried a putrid fœtus in utero; ſee, I beſeech you, how Hoffmann (*o*); notwithſtanding he conſiders too great effuſions of blood, among the preceding cauſes of inflations of the abdomen, and that even in the time of child-bearing; nevertheleſs ſoon after makes women ſubject to the ſame inflations from a contrary cauſe: as, for inſtance, if the flux of the lochia has not ſucceeded in a proper manner, or has been altogether reſtrain'd. Which I only hint, that you may remember, how many cauſes, and how different from each other, there may be of this ſame kind of tumour in the belly.

And whichſoever of theſe cauſes it was produc'd by in our woman, you will find, if you read the hiſtory over again, that it was form'd before the effuſion of blood came on; for the woman had begun to ſwell in her abdomen, and her fingers, before ſhe was deliver'd.

And in the caſe of that woman, of whom Phil. Jac. Hartmann (*p*) has written, the inteſtines were tumid with flatus, on the laſt days before delivery; and this tumour increas'd ſo much after birth; notwithſtanding there was no profluvium of blood, and even the lochia were obſtructed; that the ſuperior and inferior tracts of the inteſtine colon, in particular, could ſcarcely be comprehended "in a thread that was three parts of an ell long:" the lower part of it therefore, being ſeiz'd with a ſphacelus, and ruptur'd, fill'd the belly with the moſt fœtid ſordes, and carried off the woman on the ſecond day after delivery: and to the uterus of this woman, "the remains of the "placenta adher'd internally, to the whole ſurface; and were eaſily ſeparable with the finger: but in the cervix itſelf "coagulated blood adher'd."

However, not to ſpeak only of thoſe preternatural appearances, which occur'd in the body we have been ſpeaking of; but even to touch, at the ſame time, upon others a little, which, that you might have the whole of the hiſtory, are not omitted here; I could wiſh that learned men had read, not in the patch-work of a mere compiler, who wanted many books that were neceſſary for his purpoſe, but in Antonius Sidobre (*q*), all thoſe things which Chyrac had communicated to him, in regard to the lacteal ducts of the uterus;

(*n*) Tract. de Renib. c. 45.
(*o*) Medic. Rat. tom. 4. p. 4. c. 15. Theſ. Patholog §. 8 & 15.
(*p*) Eph. n. c. dec. 3. a. 9 & 10. obſ. 102.
(*q*) Tract. de Variol. c. 7.

for they certainly would not have ſuppos'd that theſe were the "ſame," as thoſe lymphæducts that I ſaw in this woman.

I could wiſh likewiſe, that thoſe who have ſaid theſe were ſeen by Ruyſch, and others, had expreſsly pointed out the paſſage of that author, and the year in which others ſaw them; as I did not ſcruple to declare (*r*) at what time I had ſeen them, and to whom I ſhow'd them.

Who have ſeen them after me, I know; amongſt whom I would have you obſerve, that the learned Stehelinus (*s*) had alſo ſeen them in a diſtended uterus: that is in the uterus "of a gravid woman."

But who have given figures of them, as appendages to the uterus of women, from the human ſubject, and not from the anatomy of brutes; I do not as yet certainly know: ſo that I am not ſurpriz'd, if, to that illuſtrious man Heiſter (*t*), theſe veſſels, I ſay theſe veſſels "as they are hitherto added "to the human uterus in figures, ſhould ſeem to be taken from fancy."

But in regard to the bones of the pubes, and the ileum; I do not ſuppoſe you are in the number of thoſe who contend, that it very rarely happens in child-bearing, for the commiſſures, or junctures, of theſe bones, to be found ſo lax as they were ſeen by us in this caſe; and that, when this does happen, it is to be imputed rather to the ricketts, the lues venerea, or to a cachexy: and this laſt, in a very conſiderable degree.

The woman, however, of whom we are ſpeaking, although ſhe had not a good colour in her face; yet certainly was neither affected with a cachexy, particularly in any great degree, nor with any of thoſe other diſorders: nor had a matron to whom I was related, labour'd, in the leaſt, under any of theſe complaints; although, as ſhe complain'd of a pain at the juncture of the bones of the pubes, after her time of delivery, and her huſband would, for that reaſon, have me examine this part with my hand, ſhe had one of the bones manifeſtly diſtant from the other at that time; but at other times had not.

And notwithſtanding almoſt innumerable obſervations of this kind are extant, which many have collected; they have nevertheleſs omitted ſome, if I rightly remember, and particularly one of Veſlingius (*u*): ſince he, in a woman in labour, "perceiv'd that the pelvis yielded, and ſhook, with a "ſlight impulſe; the bones, both under the pubes, and at the ſides of the "os ſacrum, being ſeparated from each other by the ſpace of an inch at "leaſt:" and Santorini (*x*) found it eaſy alſo, to lay his thumb betwixt the bones of the pubes, in ſome women who had been lately deliver'd: ſince therefore ſo many obſervations are extant; is it more proper to ſuppoſe, that, in all of them, thoſe diſorders were to be accus'd, eſpecially as the writers of the obſervations make no mention of them? Or muſt we ſuppoſe, that, as a greater or leſs ſeparation, is not only not very rare, but frequent, it is not preternatural? And even, that, in thoſe where it does happen, it happens from nature itſelf; for it comes on by degrees, is by degrees remov'd, and is of aſſiſtance to the birth, as far as it is poſſible for it to contribute thereto.

(*r*) Adverſ. Anat. IV. Animad. 43. in fine.
(*s*) Tentam. Med. p. 1. Theſ. 6.
(*t*) Comp. Anat n. 236.
(*u*) Epiſt. 25.
(*x*) Obſ. Anat c. 11. §. 4.

For

For do not imagine, that whatever enlarges the diameters of the pelvis, is uſeleſs in the promotion of delivery; and as to what is ſaid of the dimenſions of the pelvis; as if they were ſufficient to admit of the paſſage of the fœtus, without any ſeparation of the bones; it ſeems to have been taken from the ſkeleton, when no mention is made of ſuch a number of parts, that are interpos'd betwixt the naked bones and the head of the infant, that is paſſing through them; and indeed, nothing of the uterus; the orifice of which is then puſh'd down to the orifice of the vagina: which parts, though they may not ſufficiently diminiſh thoſe dimenſions in many; yet in many, on the other hand, may diminiſh them very much.

And that theſe junctures are gradually diſpos'd to laxity; as I have hinted in the Adverſaria *(y)*, in conjunction with Pinæus; I have not only had occaſion of knowing by examining the juncture of the oſſa pubis with my finger, but during the reviſal of this letter, have ſeen confirm'd by diſſection, by the celebrated Exup. Joſephus Bertinius *(z)*; and by the example of two women, the one pregnant with a fœtus of five months, and the other with a fœtus of ſeven months: for the cartilage betwixt the oſſa pubis was not only found to be "thicker than uſual, and impregnated with an unctuous hu-"mour" in both of them, but particularly in the ſecond; in whom even "without a knife," and only by a ſlight aſſiſtance of the hand, one of the oſſa ilii "was pull'd aſunder," perfectly, from the os ſacrum.

And if authors of weight and eminence had attended to this ſtate, in the junctures of the bones of the pelvis; which is begun in gravid women, increas'd at the time of child-birth, and conſequently often obſerv'd in women after delivery; they would not, in my opinion, eaſily have objected to thoſe who ſuppoſe ſuch a ſeparation, "that they cannot be broken aſunder by the "butchers but with difficulty:" or that two ſtrong men, pulling one on each ſide, were not "able to draw aſunder" the bones of the pubes.

Nor indeed is that to be wonder'd at; for they were not previouſly diſpos'd, as in women after child-birth. And indeed I commend the ingenuity of thoſe, who, in dependance on a great number of arguments, have oppos'd the opinion of theſe ſeparations as "impoſſible."

But it is to very little purpoſe, to endeavour to prove that to be impoſſible, by reaſonings, which has been ſo many times ſeen: for it is eaſy to any one to ſet aſide ſuch reaſonings; as it is more than ſufficient immediately to refute them by the undoubted teſtimonies, of all thoſe who have ſeen the circumſtance, and demonſtrated it to thoſe who were preſent.

46. But women after delivery are not only carried off by diſorders that are quick in their progreſs; as that of which I ſpoke laſt, or that which we read of in Henricus Sandenius *(a)*, from the thickneſs of the uterus being increas'd to half a ſpan, or rather from that which is not a very rare, but even a frequent cauſe; I mean a ſphacelus of the uterus, which you will ſee deſcrib'd in one, and another woman, by the celebrated Joſeph Henry Fuchſius *(b)*; I ſay, women after delivery are not only carried off by diſorders that are quick in their progreſs, but by ſlow diſorders likewiſe: for they are

(y) III. Animad. 15.
(z) Quæſt. de hoc argum. propoſita præſide Bouvart. n. 5.
(a) Obſerv. de Prolapſ. Uter. §. 14. in fine.
(b) Act. n. c. tom. 2. obſ. 146.

ſome-

ſometimes in an ill ſtate of health a long time after delivery, and even as long as they live.

In what manner a ſlow fever, from an abſceſs of the teſtis and tube, carried off a woman after delivery, I have already ſaid in a former letter (*c*); and I have ſhewn, at the ſame time, how it ſometimes happens, that from a laborious utero geſtation, and a difficult time of child-bearing, theſe parts contract great injury.

And that at the ſame time of pregnancy, the omentum, being compreſs'd by the uterus, and the other viſcera; and for that reaſon ſometimes inflam'd; may be form'd into an oblong and almoſt ſcirrhous tumour, which remains in ſome after delivery; as has even been obſerv'd by me; and affects them ſometimes with pain, but always with ſome inconvenience or other; Ruyſch (*d*) has taught us, and before him Bauhin (*e*) hinted, when he aſſerted, "that "the omentum remains collected about the middle of the belly, after de- "livery, in ſome women; ſo as to excite conſiderable pains; which however, as I have already ſaid, are not perpetual ſymptoms.

And theſe pains were the moſt ſevere, and obſtinate, after delivery, in that woman, who having been afflicted with them a long time, and at length carried off thereby (*f*), had the omentum contracted into the form of a rope.

But it had grown to the bladder, and fundus uteri, in ſuch a manner, that with the pains were join'd thoſe ſymptoms, which made her appear to ſome to be hyſterical; and to others to be troubled with calculi.

Add to this other diſorders that are not painful, but very troubleſome; which remain after a rather unhappy time of child-bearing; lameneſs, prolapſus uteri, and incontinence of urine, which have been ſpoken of in former letters; and have been partly ſpoken of in this (*g*).

Finally; for it is not my intention to enumerate every thing that relates to this queſtion; "the hæmorrhoids in the orifice of the matrix;" that is at the orifice of the vagina; mention'd by Celſus formerly (*h*), and by the author of the book which they formerly attributed to Galen; that is the book *de Gyneceis*; Arantius has, with great reaſon and juſtice, aſſerted, "ge- "nerally, to have their origin from a difficult birth," in that chapter (*i*) which he has written upon the ill effects of thoſe hæmorrhoids, their cauſes, ſigns, and cure.

And Paul Barbette (*k*) has added, by what marks the blood flowing from them, may be known from menſtruous blood.

47. Laſt of all, the cauſe of unſucceſsful births is not to be conſider'd as exiſting in the mother only, but alſo in the fœtus that is brought forth; whether this is born dead, which circumſtance I have ſpoken of before, or moreover whether it be born in a monſtrous ſtate beſides being dead; or, finally, whether it be living indeed, but is born in a monſtrous ſtate, or affected with ſome other conſiderable diſorder.

(*c*) Epiſt. 46. n. 27 & 28.
(*d*) Cent. obſ. Anat. Chir. 63.
(*e*) Theatr. Anat. l. 1. c. 12.
(*f*) Eph. n. c. dec. 3. a. 4. obſ. 7.
(*g*) N. 33.
(*h*) De Medic. l. 6. c. 18. n. 9.
(*i*) 56. in l. de Tumor. p. n.
(*k*) Anat. Pract. l. 4. ad fin.

First then, in regard to monſters, whether born alive or dead; but what I ſhall ſay here, will be rather what relates to the obſervations themſelves, than to the controverſy which is agitated in this age, among very learned men, in regard to the origin of theſe monſters: and I ſhall begin with this obſervation of Valſalva.

48. The mother of a monſter, which, as appear'd to the common people, was like a toad, had often brought forth children before, both of the male and female ſpecies promiſcuouſly; the former being all of them found in every reſpect, but the latter, which were two, one of whom was then in her thirteenth year, and the other ſome years younger, both deaf, and conſequently dumb.

At laſt, having conceiv'd about eight months before; and having lain, during the whole time of this pregnancy, always ſad and melancholy, and accuſtom'd herſelf to weep often by reaſon of this ſtate of mind; and when ſhe compar'd the motion of this fœtus with that of the others, which ſhe had brought forth before, finding it ſo languid that ſhe ſometimes almoſt believ'd it dead; ſhe brought forth, at the time I have mention'd, a female fœtus, which was furniſh'd with ſecundines indeed, that were in a natural ſtate, but was ſo monſtrous in its aſpect, that it ſeem'd rather like a toad, than a girl; if you except the lower limbs, and the inferior part of the belly.

In the firſt place, it was ſmall, ſo as not to equal a ſpan in length; but was ſo much ſhorter than this, as to be deficient, in that extent, by the breadth of a man's thumb.

In the ſecond place, the neck was entirely wanting; ſo that the chin was contiguous to the middle of the breaſt, and even was ſcarcely diſtant by the extent of an inch, from the cartilago enſiformis.

The eyes indeed were perfect; but the external ears were plac'd much lower than they generally are, and touch'd the upper parts of the ſhoulders: the mouth was gaping: the noſe was imperfect at the upper part; for the root of it, and the forehead, were entirely deficient.

Add to theſe horrid appearances, that the abdomen protuberated in the manner of a kind of purſe hanging downwards; into the middle of which purſe the funiculus umbilicalis was inſerted, and was in its natural ſtate.

Finally, the upper limbs were ſo connected to the ſternum, that they could not be extended. And on the poſterior ſurface of the body, the ſpine appear'd to be diſtinguiſh'd into three gibboſities as it were; the upper of which correſponded to the head, the middle to the thorax, and the lower to the belly.

Theſe were the appearances externally.

And by the diſſection of the belly, it was found that the purſe, into which the abdomen protuberated, was owing not only to the relaxation of the integuments of the belly, but alſo to the muſcles thereof; and that in this relax'd cavity, as in a kind of ſac, the liver, the ſpleen, the ſtomach, and all the inteſtines were contain'd: yet theſe viſcera, as well as thoſe that were contain'd in the thorax, were, in other reſpects, in a natural ſtate.

When we came to the head, a confus'd heap offer'd itſelf to our view. For there were neither the bones that are wont to form the roof of the cranium, nor indeed could we find any cavity of the cranium; but there were only

only bones of an irregular figure, ſome ſmall, and ſome a little larger, connected to each other by an intricate net-work of muſcles.

Not the leaſt traces of the brain were found, except that certain bodies appear'd, which had a very fine reſemblance to the nates and teſtes of the cerebrum; but only in their figure; for externally they were every where made firm with membranous connexions, and internally were not, by any means, ſimilar to the ſubſtance of the cerebrum; but rather to a certain body of a middle nature betwixt glandular and ſpongy.

And even if the brain had not been deficient, and this girl could have liv'd; yet ſhe muſt have been deaf as well as her ſiſters: becauſe both the foramina, through which the nerves are ſent from the brain to the ears, were ſhut up with a very firm membrane; ſo that no paſſage was left even for the moſt ſlender nervous filament.

Nor indeed could we find the medulla ſpinalis any more than the brain, nor any beginning from whence the nerves took their origin; notwithſtanding they were carried through the belly, the thorax, and the limbs, naturally enough in other reſpects.

For in tracing even the largeſt nerves; as, for inſtance, the crural; when you came near to the ſpine, you ſaw that they gradually became more ſlender, and were fix'd into the ſpine indeed; but in the whole courſe of this ſpine there was not only no medulla ſpinalis, but even no cavity for the medulla ſpinalis to be comprehended in.

49. Although Valſalva has omitted to ſay whether this fœtus was born dead or alive; and likewiſe, in what ſtate the kidnies, the bladder, the uterus, and the nerves that run through the head were; yet he has written what is ſufficient to make us very clearly underſtand, that the principal diſorder of the ſame fœtus, relates to the claſs of thoſe which I treated of in my twelfth letter to you (*l*); when I affirm'd that the cranium was frequently in great part, and the brain wholly, conſum'd by a hydrocephalus, in fœtuſſes of this kind (which are indeed not uncommonly conſider'd as toads (*m*);) and gave you examples of thoſe (*n*), in which not only the medulla ſpinalis could not be found, but what is much more rare, the tube, wherein it is naturally contain'd, was entirely deficient.

And I did not relate this hiſtory of Valſalva's among the others in that letter, as, beſides thoſe particulars, it contains others; whether you conſider the chin, or the ſpine, or the upper limbs, or in fine the abdomen, and the greater part of the viſcera of this cavity; on account of which I thought it rather more proper to put it off till the preſent occaſion.

To which I ſhould certainly have defer'd, for ſimilar reaſons, if I had then had them, the obſervation of Baronius, which will be ſubjoin'd a little below (*o*), and perhaps another of mine, which is the third of the girls I diſſected wherein the brain is deficient; for all of them, as well as this of Valſalva, and that of Baroni, were of fœtuſſes of the female ſex: which you will add to what I obſerv'd, in a tranſitory manner, in that letter (*p*).

(*l*) N. 5. & ſeq.
(*m*) Vide Haller de Fœtu Hum. ſine cerebro not. 2.
(*n*) Epiſt. 12. n. 8.
(*o*) N. 52.
(*p*) N. 6.

But now take this third obſervation of mine: a ſimilar one to which, eſpecially on account of the ſpine being bifid at the ſame time, was made two years after at Copenhagen (*q*).

50. A monſter; for ſo it was call'd; which had been born two or three days before in this place, was ſhown to me by a ſurgeon in the month of February, of the year 1746.

Upon ſeeing it, I immediately ſaid that it was without any brain. To confirm therefore what I ſaid by diſſection, I deſir'd it might be brought to my houſe; where he inform'd me, that the woman, having been the happy mother of many children before, had likewiſe had a very happy time of pregnancy with this laſt.

But that when ſhe thought herſelf come to the end, or near to the end, of her pregnancy; ſhe had not got rid of this dead girl, but by a very ifficult birth, that was quite unexpected; the fœtus being at length taken away, by the midwife, by the feet.

Yet in effect, I found it to be conſiderably leſs than a full grown fœtus ſhould be: for it was not equal to the length of a fœtus of ſeven months; and Valſalva, as I have already ſaid (*r*), found his likewiſe to be very ſmall: and this, if we conceive the head to have been previouſly diſtended, and enlarged, by the included water, may be underſtood pretty eaſily; as I have written to you on a former occaſion (*s*).

However, this little body would have been fair, beautiful, and well fed, having no ill ſmell, and the cuticle having not yet abſceded; as it was very well form'd in the reſt of its parts; if theſe deformities had not been added, that there appear'd to be no neck: and above the eyes there was ſcarce any forehead. And from that place, inſtead of the common integuments of the body, was one reddiſh membrane: and this going over the upper part of the head; which was not at all protuberant in that part, and even had a declivity on the poſterior parts; paſs'd through the middle of the back to almoſt the lower part of the thorax; being the leſs broad in proportion as it deſcended the more.

Under this poſterior part of the membrane, roſe up two bony protuberances, as they ſeem'd to be; one of which proceeding from each ſide of the head, and being leſs elevated in proportion as they receded therefrom, and more near to each other, ſhow'd that a bifid ſpine was beneath the integuments.

At the ſides of this membrane the common integuments were not deficient: and with theſe the lower part of the head, as well as all the reſt of the body, was cover'd on both ſides; being not only furniſh'd with external ears, in that part, which were contiguous to the ſhoulders, but alſo with hair; as if that part of the cutis, which lay neareſt, being pull'd away from the upper part and lacerated, that part of the hairy ſcalp which remain'd, had contracted itſelf downwards to this place.

Theſe were the appearances externally.

(*q*) Vid. Rob. Steph. Henrici Deſcript. Omenti not. ad §. 11.

(*r*) N. 48.

(*s*) Epiſt. 12. n. 7.

And upon cutting into the abdomen, a great quantity of fat firſt came into ſight; a great quantity of which was every where under the ſkin, likewiſe, wherever there was a ſkin: and when the remaining parietes of the belly were open'd, all the viſcera appear'd to be in a natural ſtate, as thoſe of the thorax did alſo.

At length coming to the head, under that red membrane (which was thin) when cut through, there appear'd nothing which I could poſſibly conſider as the remains of the cerebrum, cerebellum, or medulla oblongata, except two little horns as it were, which being thick, ſoft, and of a red colour, but degenerating into brown, were prominent in the anterior ſides of the cranium, one in each; for when cut into, they ſhow'd, beſides concreted blood, a kind of mucous matter.

Under theſe horn-like prominences, was that part of the os frontis, which makes the poſterior roof of the orbit. For the anterior roof was wanting; the bones of the ſinciput were wanting; and all the part of the occipitis, that is not before the foramen magnum of this bone, which for that reaſon was none at all in this caſe, was wanting.

Bones of the temples there in fact were; but theſe were extended downwards, laterally, and backwards. And at the foramina of theſe bones, which the auditory nerves enter, I in vain ſought for the beginnings of theſe nerves; as I did likewiſe for the others in this baſis of the cranium.

And this made me be the leſs ſurpriz'd, when I examin'd the eyes ſoon after; which as well as the eye-brows were well form'd; to find the optic nerves more ſlender than uſual, and terminating to appearance within the orbits.

I then ſaw that the tongue was very long, but not equally wide in proportion to its length. And this correſponded to the lower jaw, which was of ſuch a length, as to to extend itſelf beyond the upper anteriorly; though the upper was here greatly ſtretch'd out forwards, as it deſcended: and yet the right, and left, parts of the lower jaw, were at a greater diſtance from each other, the more they receded from the chin; as they naturally are.

Wherefore the interval betwixt the two, was longer indeed than uſual, but much more narrow; and was moreover ſtill render'd narrower, by a peculiar thickneſs in both of them. And at the lower part of the chin, both of them had coaleſc'd into one bone; without any line being interpos'd, as generally happens in children.

And now to ſpeak of the ſpine; all the vertebræ of the neck were not really wanting, but only three: yet the reſt were ſo crowded upon each other, that certain parts of ſome of them were concreted into one ſubſtance with the contiguous parts of the next. And the ſame was ſeen in the two or three uppermoſt vertebræ of the thorax; the very bodies of which were even join'd into one ſubſtance.

From theſe the ſpine began to proceed backwards, and at the ſame time to be curv'd towards the left ſide: which incurvation, when it had reach'd almoſt to the vertebræ of the loins, was chang'd into a contrary direction; and thus was continued even through the os ſacrum.

But the firſt incurvation was much more conſiderable than the ſecond: wherefore the latter only lifted up the left os ilium a little; but the former rais'd

rais'd up the right ſcapula conſiderably, and made the whole ſeries of the ribs ſtand out differently in that ſide, from what they did in the oppoſite ſide.

And there were on the right ſide eleven ribs only; whereas on the left there were twelve, yet the thoracic vertebræ were in all only eleven, and the lumbar ſix.

But what was more worthy of remark, the ſpine was really bifid. For the upper vertebra of the neck, and all the others after that; if you except thoſe that are below the laſt but one of the loins; had all that bony matter, which is added to their bodies, in order to form a tube for the ſpinal marrow, collected on both ſides, and expanded, in order to compoſe thoſe two protuberances externally, of which I ſpoke above. Wherefore, as in the celebrated obſervation of Littre *(t)*, there was no tube, and no ſpinal marrow in this ſubject.

If at any time you come to Padua, you ſhall ſee the whole ſkeleton curiouſly prepar'd by our Mediavia; whereby every thing that I have deſcrib'd in the bones, is clearly ſhown.

But it would have been much more beautiful to look at, if the bones could all have been brought to that whiteneſs, which they have in the ſkeletons of other fœtuſſes, that I have by me in great number. Yet, although the bones are hard, and no care was omitted to procure this whiteneſs; what I did not think ought to be omitted in compleating this obſervation; a certain brown and blackiſh colour could not be entirely remov'd from ſome of the bones in particular: and eſpecially from moſt of the longer bones in the limbs.

And in regard to theſe longer bones, I think it ought not to be conceal'd, that they were of leſs thickneſs than they generally are in fœtuſſes of a height equal to this; but of greater length.

51. In the ſame year 1746, when I happen'd to paſs the month of September in my native place, Philip Baroni; the great grandſon of him who wrote upon the pleuropneumonia, formerly my agreeable auditor, and at that time a very experienc'd phyſician among his native Meldulenſes, who loſt him by an untimely death; ſent to me an obſervation, together with figures, which he had made about that time; and which is ſimilar to that propos'd juſt now *(u)* from Valſalva; and therefore will not be omitted in this place.

52. A monſtrous girl was brought forth in the beginning of the ſixth month after conception, by a woman who was in the thirty-ſixth year of her age; but of a bad colour, thin, and much extenuated from great labours, which ſhe had undergone beyond her ſtrength; and from bad food.

And beſides that ſhe herſelf had very infirm health, ſhe was likewiſe married to a man who was not robuſt, but even of a dull and heavy nature; and ſhe aſſerted, that, in the months preceding this abortion, ſhe had been terrified in her dreams, by a face very much like that which the girl had.

For, beyond the eye-brows there was no forehead or head: the noſe was depreſs'd, the mouth gaping, the external ears contiguous to the ſhoulders;

(t) Mem. de l'Acad. R. des Sc. a. 1701. *(u)* N. 48.

and that on the right ſide was very much inclin'd downwards: there was no neck, and no chin: for the face below the ears and the mouth, terminated immediately in the breaſt; ſo that, as it was deficient in its ſuperior part, it was alſo deficient in its inferior part.

The muſcles of the abdomen, and the common integuments of the body, that lay upon them, did not inveſt the much greateſt part of the anteriors of te ely; but a membrane that was lax, and extended into the form of a very large purſe, cover'd this part: and into this membrane thoſe muſcles, and integuments, being gradually extenuated, ſeem'd at length to degenerate.

Within this membrane, which was pellucid by reaſon of its thinneſs, the liver and inteſtines were ſeen to be hanging outwards.

The thumb was wanting on the right ſide: and this hand was ſo bent upwards, that betwixt that and the arm was comprehended almoſt a regular angle. Theſe were the appearances anteriorly.

On the back part, you might ſee the regio dorſalis cover'd with hairs: and at the upper part of this region, in the middle place betwixt the ſcapulæ, was a large and deep chink gaping like another mouth; which was form'd by the vertebræ being open in that part.

And not much above this chink, aroſe from the occiput, by a broad baſis, a kind of flat muſcle, which being unconnected with other parts, if it were extended forwards, cover'd the eyes, and the noſe, in part: but if it were carried to the poſterior parts, cover'd the back quite to the loins.

And this muſcle was ſimilar to the tongue of an adult man, both in figure, and magnitude. From which you may eaſily conceive how ſmall this girl was.

Although ſome things are wanting in this deſcription, and thoſe in particular which ought to have been inquir'd into by diſſection; if that had been permitted; yet from the defect of the forehead, and the remaining part of the fornix of the cranium; as I gather from the adjoin'd figures; and in like manner from the foramen, or rather if you pleaſe from the chink, which was form'd by the gaping of the upper vertebræ; I ſeem to myſelf to be ſufficiently clear, that in this fœtus, as well as in that of Forli (*x*), with which you will compare the preſent obſervation, the cerebrum was wanting.

And indeed I had an opportunity of examining, but not of diſſecting, a fœtus, at Padua, in the year 1735, whoſe hiſtory, which I then collected with accuracy, I will ſubjoin here; not only for ſeveral reaſons relating to the mother herſelf, but alſo becauſe in that which relates to the abdomen at leaſt, and could be ſeen without diſſection, it comes very near to thoſe of Valſalva, and Baroni.

53. A matron of one and forty years of age, yet in pretty good health, and the mother of many children at leaſt; whom ſhe had brought forth very happily, and all of them very well form'd; brought forth a monſtrous infant.

This woman had had no appearance of her menſtrua in the October laſt paſt, nor in the months after that, to the twenty-firſt day of June: the

(*x*) Vid. Epiſt. Anat. 20. n. 56. & ſeq.

belly,

belly, and the breaſts, ſwell'd in their proper time; together with a good colour of the face, there had been a pretty good ſtate of health.

Yet ſhe did not think herſelf pregnant, becauſe many ſymptoms of her former pregnancies were wanting; in particular the tumour of the belly in ſo great a degree as it us'd to be before; and the motion of the infant, which had hitherto been very great and continual, but was now none at all. To theſe circumſtances was added, that, in the laſt months a hard and circumſcrib'd tumour, like a diſtended bladder, was perceiv'd, for the moſt part, in the hypogaſtrium: but ſoon after ſeem'd to vaniſh away ſuddenly.

This then being the ſtate of the caſe; and, in the laſt week before the day juſt now mention'd, a frequent and unuſual neceſſity of making water, and a ſenſe of weight about the pudenda coming on; and her breaſts decreaſing in their tumour three days before; and finally, on the day before, a few drops of a brown and thick humour, and in the morning of the following day, the ſame quantity of bloody matter, having diſtill'd from the genitals; labour pains came on after dinner: and ſhe brought forth with very great eaſe, and without the aſſiſtance of any midwife, the membrane amnios in an entire ſtate; for the chorion was turn'd upwards; with the annex'd placenta.

As ſhe had us'd to be troubled with very long-continued pains for the moſt part, and with a ſlow and difficult excluſion of the placenta, ſhe was ſo much the more ſurpriz'd at this new and very great facility; becauſe, though ſhe had been accuſtom'd to diſcharge a great quantity of blood, both at the time of menſtruation and delivery, but a little was diſcharg'd at preſent; and but little on the following days likewiſe, except one.

And to finiſh the whole hiſtory of the mother; ſhe roſe up to her uſual domeſtic employments, not on the thirtieth day, as at other times, but on the third, or fourth; and even ſoon after went from home: nor was this conduct of any injury to a woman who was in other reſpects not very robuſt: nay ſhe was even as well as ſhe had ever been, became impregnated afterwards, and brought forth a living and well-form'd child.

But, on the other hand, let me tell you how deform'd her preſent offſpring was.

The ſecundines, as far as I could judge, did not differ from the uſual appearance of nature; except that the placenta ſeem'd to be ſomewhat ſmall, in proportion to that bulk, of the entire amnios, which was deſcrib'd to me: for it was of the diameter of three inches and a half. In the amnios was a yellowiſh and turbid water, but not fœtid; and the dead infant ſeem'd, to me, not to be leſs long than thoſe generally are, that are brought forth betwixt the fifth and ſixth month.

The face of it was very long, and therein a fleſhy globe, in appearance, was prominent from the middle of the lower part of the forehead. Under this lay the eyes contiguous to each other; for there was no noſe; not cover'd with eye-lids, but with a tranſparent membrane through which they were ſeen.

The mouth was in its proper place; but gap'd ſo as to ſhow the inciſor teeth. The abdomen was open in the middle; and the inteſtines were puſh'd out from thence. The common integuments of the body were alſo open at the loins; but the hiatus did not deſcend much lower.

All the limbs were in a very bad ſtate: the upper limbs from the elbows downwards; for to the arms, which were very ſhort and diſtorted, diſtorted hands were likewiſe added. And the inferior limbs terminated likewiſe in diſtorted feet: but the left leg was either broken, from the funiculus umbilicalis having been wrap'd very cloſely round it; or was more diſtorted than the other parts.

54. What if the mother had been preſent at ſome horrible ſpectacle, or had ſeen ſomething of the like kind in a picture; or, at leaſt, like the woman ſpoken of above *(y)*, had dream'd of ſuch an appearance?

But this mother denied that ſhe had ever ſeen any thing of the kind, or had even ever thought of it, waking or aſleep; or that any conſiderable force had been applied to her belly, during the pregnancy, either by falling, or conſtringing, or compreſſing it; or, finally, by ſhaking it violently: for we have an example of this cauſe alſo in a very violent convulſive cough *(z)*: this only ſhe confeſs'd, that during the whole of this pregnancy, ſhe had been very gloomy and down-caſt in her mind; ſo that if we compare the geſtations of theſe four monſtrous fœtuſſes, and that alſo of Forli *(a)* one with another, it is wonderful, that the geſtation of that which we deſcrib'd in the ſecond place *(b)*, was ſo happy.

But as to what I ſaid juſt now, as if in oppoſition to the powers of the mother's imagination; I would have you underſtand it as coming from a man, who is by no means diſpos'd, immediately to account for every monſtrous appearance in fœtuſſes, from this power.

For many relations are extant of diſorders of this kind, and particularly of that we are ſpeaking of; and not only in the collections of patch-work compilers, but even in the writings of illuſtrious men, who have firſt publiſh'd an example of theſe diſorders; or ſome one of that kind; as ſeen by themſelves, and others *(c)*.

But if you examine the greater part of thoſe authors, from whom theſe examples are produc'd, you will ſee how readily they are accounted for from the imagination of pregnant women; and that when even they could be very fairly deduc'd from ſome external violence, a part is nevertheleſs aſſign'd to the imagination likewiſe.

Though I cannot approve theſe things; yet, on the other hand, there are caſes wherein it ſeems to me to be very hard to depart from that opinion, which is common to the greateſt men, totally and altogether. What Boerhaave *(d)*, what Van Swieten *(e)*, what other grave authors of undoubted credit aſſert to have been ſeen by them that relates to this queſtion, no one will doubt the truth of.

(y) N. 52.

(z) Commerc. Litter. a. 1735. hebd. 9. n. 2.

(a) Vid. n. 52. ad finem.

(b) N. 50.

(c) Vid. Sachs Eph. n. c. dec. 1. a. 1. Schol. ad obſ. 135. Schroeck. dec. ead. a. 6 & 7. obſ. 232: Goth. Ben. Preuſſ. in Append. ad earund. cent. 7 & 8. Ritter. Act. n. c. tom. 8. obſ. 88: Stalpart. cent. 2. p. 1. Schol ad obſ. 36: alioſque; ſed præ cæteris Haller, not. *c c.* & ſeq. ad Prælect. Boerhaav. §. 694. & Opuſc. Anat. VI. §. 16. not. III. & ſeq. & Opuſc. IX. not. 2. & ſeq. ad §. 3.

(d) Prælect. ad Inſtit. §. 694.

(e) Comment. in Boerhaav. Aph. §. 1075. ad 2.

If any one contends that each of them might be produc'd, at other times, from ſome internal diſorder; I ſhall not greatly conteſt it with him. But that they were, at that time, produc'd from the ſame place, I cannot readily allow.

A mulberry falls upon the globular part of the noſe of a pregnant woman; and this woman brings forth an infant, on the globular part of whoſe noſe a mulberry protuberates; "perfectly expreſs'd" in its magnitude, colour, its roundiſh prominences, its roughneſs, and its very ſmall hairs.

A caterpillar falls from a tree upon the neck of another woman, and cannot be taken away but with difficulty; and a girl is born, on the ſkin of whoſe neck, the form of a caterpillar is prominent; being of various colours, and having upright hairs; and, in a word, being ſo ſimilar to a true caterpillar, that even "no egg could be more like another."

Another woman ſees a beggar that has a hair-lip, is terrified at it, and brings forth a child that has its lips deform'd with fiſſures, of the ſame kind that were ſeen in the beggar; and even perfectly ſimilar as to their dimenſions *(f)*.

Another *(g)* heard of a little girl, whoſe right hand was entirely without fingers; the thumb only being in its proper place, and the places of the fingers being occupied by nails prefix'd to the metacarpus: theſe things ſhe thought of in herſelf "very much, and for a long time;" and ſhe at length brought forth a fœtus whoſe right hand was juſt in the ſame figure.

Nor muſt we conceal the caſe of her *(h)*, who brought forth a boy without a cranium; the place of the brain being occupied by a kind of red fleſhy maſs; and who, having underſtood that two children were taken out of the water, in which they had been drown'd, without any ſkull, and without any brain, had excruciated herſelf "with that fix'd and obſtinate imagination, "and with a perpetual rumination on the paſt evil:" nor ought ſhe to be forgotten who *(i)*, having brought forth a girl affected with the hydro-rachitis in the loins, "and having the ſame idea continually, and repeatedly, reviv'd "in her imagination;" at the next time of child-bearing brought forth another girl; "disfigur'd with the ſame kind of deformity as the firſt, and ex- "actly in the ſame place."

Finally; to omit other obſervations which might be produc'd, and ſome which I very well know in conſequence of having ſeen them, and to ſpeak of one which in ſome meaſure relates to the three that I laſt deſcrib'd to you; there was a woman *(k)* who brought forth a fœtus which had its hands and feet incurvated upwards, and was deform'd with two tumours in particular, the one at the os ſacrum, and the other under the navel, where the inteſtines, and the other viſcera, coming out through the hiatus of the abdomen, greatly rais'd up the peritonæum, in which alone they were contain'd.

As the midwife was prudently determin'd neither to ſhow, nor deſcribe, to the mother a birth of this kind; the woman herſelf of her own accord deſcrib'd it, ſaying, that ſhe, in the middle of her pregnancy, had dream'd of

(f) Vid. act. n c. tom. 6. obſ. 10.
(g) Commerc. Litter. a. 1632. hebd. 20.
(h) Eph. n. c. dec. 3. a. 9. & 10. obſ. 106.
(i) Salzmann. diſſert. de quibuſdam tumor. tunic. ext. §. 3.
(k) Schol. ad Preuſſ. obſ. cit.

an

an infant ruſhing violently againſt her belly, which had its limbs incurvated in this manner, and was deform'd with two tumours; one anterior and one poſterior; in the ſame manner as her fœtus really was: wherefore, waking out of her ſleep in a fright, ſhe had ever after retain'd the melancholy idea of her dream.

You will perhaps then ſay, if you deny that this can be aſcrib'd to the imagination of the mother; tell me, I beg of you, by what means theſe appearances can be produc'd.

But there would be too many things in phyſics that I muſt deny; if they were to be denied, becauſe I do not underſtand the manner in which they are brought about.

And certainly, even you; if you are willing to confeſs the truth, according to your cuſtom; do not ſufficiently underſtand, how it has happen'd, that, after thoſe particular imaginations, a diſeaſe was at hand which deform'd the fœtus, in the ſame manner as the imagination had ſuppos'd; ſo that the mulberry we have ſpoken of, the caterpillar, the fiſſures of the lips, the mutilation of the fingers, and the unuſual ſituation of the nails, that defect of the cranium and cerebrum, that diſorder of the ſpine, that incurvation, and thoſe tumours, not only anſwer'd perfectly to the imagination in their figure, and other conditions; but they even exiſted in the globular part of the noſe, on the neck, on the right hand, on the lips, in the head, in the loins, in the limbs, on the poſterior and anterior ſurface of the body, in ſuch a manner as the foregoing imagination requir'd.

Perhaps you will ſay this happen'd by accident. And I ſhall readily aſſent to you where a certain imagination has not preceded; and the diſorder does not correſpond ſo exactly, both in figure and circumſtances.

But where this has preceded, and the diſorder correſponds thereto, in the manner I have ſaid; not even you yourſelf, if you conſider all things accurately, can entirely acquieſce in the accuſation of chance; eſpecially, if you have an eye not only to one example, but to a great number, as there are: for you will not eaſily ſuppoſe that chance could have been ſo ingenious, if I may be allow'd to ſpeak thus, and ſo exact an imitator.

What is then the caſe? In reſpect to myſelf, in many, and even in very many, inſtances, I ſhall readily accuſe chance if you pleaſe; but in ſome of the examples I ſhall rather accuſe ſomething elſe, which I confeſs I do not underſtand.

Now to return to the fœtus which I laſt deſcrib'd; the death of it was brought on either by the circulation of the blood being impeded through the funiculus umbilicalis itſelf; in conſequence of its being bound cloſely round the leg; or by ſome very bad conformation of the internal parts, like that of the external; which naturally depriv'd it of the power of growing, and moving itſelf.

And the exit of the inteſtines from the abdomen; the blame of which is often thrown upon the rough and violent handling, and preſſure of the midwives, when they deliver the infants; in this caſe, where there could be nothing of that kind, certainly muſt be attributed to the abdomen itſelf of the fœtus never having been ſhut up; or at leaſt not ſufficiently ſhut up.

For

For from the original formation; as Harvey (*l*) has alſo ſeen in the embryos of perfect animals, as they call them, and as I have certainly ſeen in thoſe of dogs; it is open.

And afterwards, unleſs the peritonæum, the muſcles, and the common integuments firmly and cloſely ſhut it up, it muſt, without doubt, either remain open, as many have found it, and among theſe formerly, more than once, Boſcus (*m*) (whom I do not remember ever to have ſeen quoted in collections of obſervations of this kind); or muſt be relax'd into a purſe of the ſame kind with that ſeen by Valſalva (*n*), and Baroni (*o*): and if the covering is very thin and ſlender, it may eaſily be broken through by the very weight of the viſcera.

For when it is made up of the peritonæum only, it is ſo thin, as even to ſuffer the periſtaltic motion of the inteſtines to be ſeen through it; as Ruyſch (*p*), who has three obſervations relating to diſorders of this kind (*q*), has aſſerted.

In reading of which obſervations attentively, and comparing them one with another, and with thoſe which he gave afterwards, in his anſwer to Bidloo (*r*); where he contends that theſe obſervations are rare; you will perhaps wiſh he had not previouſly ſaid, without any kind of repugnance, that this diſorder had been ſeen by him "many times," and "frequently."

But leſt you ſhould ſay, that all the obſervations of monſtrous fœtuſſes whatever, which I have produc'd above, relate to the defect of parts, I will add ſome which ſhow an increas'd number of ſome parts; and that either with a defect of others, or without a defect of any.

One that was formerly ſent to me by that very eminent phyſician, while living, Sebaſtian Trombelli, which deſcribes, beſide that diſorder of the abdomen, of which I ſpoke juſt now, a great part of one infant growing to another; and that not only externally, but mix'd internally in their ſubſtances; I ſhould very gladly have produc'd here, if I had not given it to our Valliſneri, by whom it was publiſh'd, in the latter end of his elaborate volume on generation (*s*). I will give you another however, in which my friend Mediavia obſerv'd both the diſorders in ſome meaſure.

55. An infant was born at Padua, about the beginning of July, in the year 1736, of a mother who had before brought forth other healthy and living children, and brought forth others afterwards.

This child, if you look'd at it, had one diſorder, which was a tumour equal to the ſize of a man's fiſt, in that part of the abdominal region, on the right ſide, which is call'd umbilical, and a little above the navel itſelf.

The tumour was deſtitute of ſkin, which, being elevated round about into a kind of border, terminated in a little prominence: Boſcus (*t*), who had taken it into his head to ſuppoſe that this was caus'd by an ulcer, would have call'd it a cicatrix; as you alſo may call it, where you ſuppoſe the hiatus of the abdomen, to have been produc'd by ſome violence; and the parts in

(*l*) De generat. animal. exerc. 69.
(*m*) De facult. anat. lect. 1. in fine.
(*n*) Supra. n. 48.
(*o*) N. 52.
(*p*) Cent. obſ. anat. chir. 73.
(*q*) Ibid. obſ. 71. & 72.
(*r*) Reſponſ. ad Bidl. vind.
(*s*) P. 3. c. 5. & tab. 3. 4 & 5.
(*t*) Lect. 1. Paulo ante cit.

which the hiatus is produc'd, to be retracted on one ſide and on the other; and explain the caſe nearly in the ſame manner as the celebrated Preuſſius (*u*) explains it.

The tumour was unequal, and yielded to the touch; ſo that it ſeem'd to be made up of the inteſtines. The infant at firſt neither diſcharg'd any thing from the inteſtines, nor ſuck'd the breaſt. Yet ſoon after it began to do both.

But what it diſcharg'd from the inteſtines was green: and the clothes were thereby ſtain'd with ſpots, which could not be waſh'd out but with great difficulty; and indeed, frequently not at all. And the tumour which had been ſomewhat livid before, began in the mean time to be more livid, and at length to be ſeiz'd with a gangrene. Part of the rectimuſcles, that lay under the ſkin, abſceeding, together with the ſurface of the tumour, the infant died on the five and thirtieth day after its birth.

The diſſection of the belly ſhow'd that this child had a double liver; one of them being in the uſual ſituation, and rather ſmall, though divided into very long lobes; the other larger, but ſhapeleſs: and this being join'd with the former, by the interpoſition of a thick membrane; annex'd to the trunk of the vena portarum, but ſending its veins into the cava, below that other liver; extended itſelf to ſuch a degree, as to force the peritonæum, which adher'd to it, and the tendons added thereto, outwards, and make up the tumour of which I have been ſpeaking.

And this tumour yielded to the touch, from the yielding of the inteſtines; upon which this liver in part lay. But although there was a double liver, no gall-bladder appear'd any where. However the ſmall inteſtines were in a natural ſtate; but the colon was very much contracted.

56. Shall we ſuppoſe, that as two ſpleens are ſometimes found in one body; and that even not very ſeldom; for I have ſeen it three times (*x*); ſo alſo two livers were given to this one infant? Or muſt we ſuppoſe the larger liver, which was prominent outwards, to have belong'd to another fœtus, the other parts of whom had periſh'd in the uterus?

For in that double-bodied fœtus which Zambeccari had diſſected, and Valliſneri has produc'd (*y*), the livers of both bodies ſeem to be join'd together by a kind of thick membrane that was interpos'd (*z*).

But ſhall we ſuppoſe it to have happen'd by mere accident, that the veins of the præternatural liver, ſhould come into the ſame trunks, into which the veins from the liver proper to this infant open'd?

Without doubt this difficulty, which is much greater in moſt of the viſcera of that double-bodied fœtus, is one of thoſe which have given riſe to the late controverſy upon the origin of monſters.

Nor were the ſame circumſtances wanting in a calf, which was with great kindneſs ſent to me, in the beginning of March in the year 1745, by that very reſpectable and learned man Jo. Dominic Lavarini, counſellor at Verona.

In this calf I ſhould probably have obſerv'd many more things; and ſuch, perhaps, as would be more worthy of being written to you; if it had not been brought firſt from the mountains to Verona, and from thence to Padua;

(*u*) In append. ſupra ad n. 54. cit.
(*x*) Epiſt. 37. n. 30; epiſt. 38. n. 34; & epiſt. 64. n. 2.
(*y*) C. 5. ad n. 54. cit. & tab. 7. & ſeq.
(*z*) Tab. 10. fig. 3 & 4.

after it had been born dead, and had the belly open'd; moſt of the viſcera being taken out in order to preſerve it the longer: and not only this but the diaphragm being cut into, and the pericardium laid open; ſo that, at ſuch a diſtance of time, it was become leſs fit for diſſection and accurate obſervation. Yet the few things I had it in my power to obſerve, I will ſet down here.

57. A two-headed calf, whoſe heads and necks, if you compar'd them one with another; and the remaining parts of the body, if you compar'd them with other calves naturally born; ſhow'd ſcarcely any difference, when look'd upon externally; gave the following appearances after the thorax was open'd and examin'd.

The ſpines, as they came from two necks, continued to be two in the thorax likewiſe; being disjoin'd by ſome diſtance: but this diſtance decreas'd ſo much the more, in proportion as they deſcended the lower; ſo that, at length, below the thorax there were no longer two ſpines but one only.

And the tranſverſe bones became ſhorter in the ſame order; and correſponding to the ribs in thickneſs, in breadth, and in ſituation, were each of them plac'd in that interval of the ſpines.

In the courſe of this interval paſs'd the deſcending trunk of the great artery, which was very large in conſequence of being made up of two joining into one, and did not ſend off two intercoſtal arteries only, but three and three in order, as far as this interval continued: for one of theſe arteries went to this interval itſelf.

Each ſide of the thorax was occupied by two large lobes of lungs, of which I have written to you on a former occaſion (*a*); for each aſpera arteria was divided into double bronchia, deſcending on each ſide from their proper neck.

There were two thymi alſo; although at firſt they ſeem'd to be join'd into one. There was, however, but one pericardium, though in it two hearts, quite disjoin'd from each other, were contain'd.

Theſe hearts were equal to each other in ſize, and of the ſame ſtructure both internally and externally: but they differ'd in theſe things; firſt, that as one of them was very near to the ſide of the other, the ſurface of the left, which was contiguous to the right, was ſo conſiderably hollow'd out, as to receive the natural convexity of the right, to which it perfectly correſponded: and in the ſecond place, that both of them did not turn the ſame ſurface to the ſpine; but the right that which it naturally ought: and the left had that ſurface, which is uſually turn'd to the ſpine, turn'd to the right heart: and that was the ſurface which was hollow'd out in the manner I have ſaid.

And leſt you ſhould ſuſpect this excavation to have been brought on by the right heart; which perhaps might have lain on the other for a long time after death; remember that this hollowneſs was conſiderable; as has been ſaid; and know that there was ſuch a firmneſs, and thickneſs, in the parietes of both hearts, in this calf; which was already at its full growth, and had been perfectly well-nouriſh'd in the uterus; that it is impoſſible to account for that excavation from thence.

And if not only the hearts, but other parts alſo, had been very firm at that time; and a moſt putrid ſmell had not been more and more troubleſome; not

(*a*) Epiſt. 19. n. 48.

only to me who diſſected, but even to thoſe who were near me; I ſhould have gone on, with pleaſure, ſtill to inquire into other circumſtances of this monſtrous formation.

However, of all the viſcera which remain'd in the abdomen, I did not ſee that any was doubled contrary to the uſual courſe of nature.

58. As the infelicity of birth, which is ſeen in the off-ſpring produc'd, does not only happen when it is born in a monſtrous ſtate; but alſo, as I have laid down above (*b*), when it is affected with ſome very conſiderable diſorder; I will alſo hint a few things on the ſubject of this infelicity: I ſay a few things only; not becauſe the dignity of the ſubject, and even neceſſity itſelf, would not require more, but becauſe this letter has already run out to a great length.

For there are few diſorders of infants, which really fall under the notice of the ſenſes; if you compare them with the very great number of internal diſorders: and theſe are they which deſtroy a great part of the human race, ſoon after they are born: and that ſo much the more eaſily, in proportion as all the veſſels and viſcera, by reaſon of their tender and ſoft ſtate, are leſs fit to protect themſelves againſt preternatural diſtentions and attritions; and ſtill leſs to correct the diſorder of any other viſcus, or veſſel, from whence thoſe, or any other injuries, are communicated to them.

And to theſe diſadvantages another very conſiderable one is added: I mean that phyſicians cannot receive narrations, or anſwers, from infants; ſo as to make them underſtand, in what part of the body, and with what uneaſineſs, they are affected; and conſequently cannot know what kind of remedy it is neceſſary to uſe, in order to aſſwage, and diminiſh, this uneaſineſs at leaſt, if it cannot be cur'd. Wherefore, Ballonius in particular, who excell'd in his profeſſion, pitying the lots of infants, and tender children, has, in more than one place, admoniſh'd us (*c*), that as we muſt then deal with children, "as "if with dumb patients" (who however, when adult, ſignify many things by nods and geſtures) we ought to be the more diligent to obſerve all the marks of diſeaſes that we can in them, and to proſecute them by the moſt prudent conjectures: and he has taught us, by his examples, both in the pleuriſy, and the ſtone of the kidnies, not only what ſigns he had obſerv'd in living children, but alſo what he had found by diſſection in the bodies of thoſe that died of theſe diſorders.

And I, in purſuance of his plan, have formerly recommended the ſame method in the idea of medical inſtitutions; that art, like a convenient and friendly interpreter, may not be wanting to aſſiſt thoſe, to whom nature has denied the power of making known their own diſorders.

And if theſe things are neceſſary, even in thoſe diſorders of infants, which, in conſequence of being common to adults, have ſymptoms that are well-known to phyſicians, how much more neceſſary will they be, in thoſe diſeaſes that are peculiar to infants!

59. I call thoſe diſeaſes of infants peculiar, which are from the peculiar intention of nature, in them, being diſturb'd; as, for inſtance, a change of the

(*b*) N. 47.
(*c*) Vid. l. 1. conſil. 76. in fine, & epidem. l. 2. conſtit. autumn. a. 1557. ad 8. & in annot. & conſtit. æſt. a. 1558. ante med.

circulation

circulation in the blood, from that which was requir'd in a fœtus, into that which is requir'd in a child that is born.

In the former, as you very well know, the blood was carried, from the placenta, through the umbilical vein, into the vena portarum; and from thence part of the blood, through the canaliculus venoſus, into the vena cava: and from this a part goes through the foramen, which they call ovale, into the ſinus of the pulmonary vein; and part into the right ventricle of the heart; and from this cavity a part through the pulmonary artery into the lungs; and finally, a part thro' the tubulus arterioſus into the great artery; from the iliac branches of which, a conſiderable portion of the blood was carried, through the umbilical arteries, into the placenta.

But theſe arteries, when the infant is already born, are tied up together with the vein of that name, and cut off; ſo that no blood can any longer be carried into them, nor carried back therefrom.

And the canaliculis venoſus, and the tubulus arterioſus, are afterwards, by degrees, ſhut up; as the foramen ovale is alſo at length, if not quite ſhut up, at leaſt generally diminiſh'd.

It therefore happens, that the blood does not paſs into the cava, from the vena portarum, but by the hepatic roots of the cava: and as that which is carried through the cava to the heart is thruſt into the pulmonary artery; ſo nothing can come from this tube into the great artery, which is not carried through the pulmonary vein into the left ventricle of the heart.

Add to theſe, the other intentions of nature at this time, that are peculiar, and neceſſary, for all thoſe changes; as, for inſtance, that the milk muſt be ſuck'd from the breaſts, ſwallow'd, and prepar'd in the ſtomach; the diaphragm muſt be alternately contracted and relax'd; the lungs muſt be open'd and dilated; the air muſt be drawn in, and preſs'd out again; and other things of this kind muſt take place.

Then imagine, that if any one part of the body be leſs proper for theſe new, and neceſſary offices; or give too great a reſiſtance; or cauſe thoſe paſſages which ought to be ſhut up, to be ſhut up much later than this new mode of life requires: imagine, I ſay, what muſt be the conſequence, and you will readily conceive, how various, and manifold, the diſorders may be that are peculiar to new-born infants.

60. I will illuſtrate theſe things, by the inſtance of a diſeaſe which falls under the notice of the ſenſes. Infants are ſometimes born without a palate; or are born with a fiſſure of the palate. Whether, in theſe caſes, ſuction, or deglutition, or both, are prevented, or made much more difficult, it appears, that, by this means, the mouth is made unfit, or at leaſt leſs fit, for ſucking.

But as the diſeaſe is not only evident, but external, art contrives a method, either of preſerving the infants for many days; or, where the diſorder is leſs conſiderable, for many years, and to a long life.

You will read what has been deliver'd by thoſe celebrated men, Maloet, and Petit (*d*): the former of whom relates that a child, born without a palate, had liv'd fifteen days, by putting milk into the mouth with a ſpoon; and the

(*d*) Hiſt. & Mem. de l'Acad. R. des ſc. a. 1735.

latter, that ſome were preſerv'd, who had been born with a fiſſur'd palate, by a goat giving it the teat of a dug half-full of milk; by the thickneſs, length, and ſoftneſs, of which, the fiſſure of the palate, and the cavity of the noſtrils, were ſhut up at the ſame time: ſo that it was neceſſary to withdraw the teat every now and then, to prevent reſpiration being impeded.

And this was done in thoſe, who could not have accuſtom'd themſelves, as many others that he ſaw could not, to thoſe inconveniencies in ſucking, and ſwallowing, which are the neceſſary conſequences of a fiſſur'd palate.

And with this hope of accuſtoming the child to bear theſe inconveniences, or at leaſt preſerving it the longer, I remember that, in a ſimilar caſe of an infant, born at Padua, I took care, in the mean time, to have nouriſhing glyſters thrown up. Yet not only the diſeaſe is then manifeſt, as I have ſaid, but the cauſe alſo.

And there is another diſorder, that is manifeſt; but the cauſe is uncertain; as, for inſtance, when infants newly born are affected with a very conſiderable jaundice: for with a kind of ſlight jaundice, almoſt all of them are attack'd, a little after birth. And if the cauſe of this ſlight jaundice were aſcertain'd; there would be, in my opinion, for the moſt part, ſome hint to lead us to a probable conjecture at leaſt as to the cauſe of that more violent diſorder.

I have heard ſome account for the more ſlight jaundice, from the mothers milk, which is yellowiſh after birth. And indeed I myſelf have ſometimes ſeen this fluid to be yellowiſh at that time.

But ſuppoſing this to be the caſe even at all times; yet how has it ſometimes happen'd, that I have ſeen thoſe infants to be very yellow likewiſe, who had ſuck'd neither the milk of the mother, nor of any other woman, who has been lately deliver'd? Or how ſhould it happen, that Sylvius (*e*) obſerv'd "many to have been born with a jaundice," and not only "to have had it "appear upon them ſome time after birth?"

There are learned men alſo, who ſuppoſe all newly-born infants to become icteric in conſequence of a coagulum being made of the firſt milk, which grows acid in the ſtomach; whereby the duodenum is diſtended ſoon after, and the bile regurgitates into the liver; and the blood, in conſequence of its paſſage this way, being ſtop'd up: which cauſes are diſtinguiſh'd from this circumſtance, that by a little rhubarb, or ſoap, this jaundice is gradually carried off.

But in many of thoſe, that are born with this diſorder, it is very clear that the milk had never been made acid in the ſtomach: and in reſpect to fifteen children of my own, who all became yellow ſoon after birth, and ſome of them in a conſiderable degree, the diſorder was naturally carried off in every one of them of itſelf, and without the leaſt aſſiſtance of art.

But that, in all theſe, the milk, which ſome had ſuck'd from their mother, and others from different nurſes, had grown acid is ſcarcely to be ſuppos'd: and indeed in other infants indiſcriminately, who ſuck ſo different a milk, and have ſo differently-conſtituted a ſtomach, we cannot reaſonably ſuppoſe this to happen.

Perhaps ſome perſons would be ready to believe, that this new aliment

(*e*) Prax. med. l. 1. c. 46. n. 11.

carries

carries more of the oily particles into the blood than the liver is equal to the ſecretion of; if they did not then ſay, that the inteſtinal fœces were white, which is a very clear argument that the bile does not at all flow into the inteſtine duodenum.

How is it then? If an effect, which is common to all, muſt have a common cauſe, it is not repugnant to probability; that we ought to have our eye to the vena umbilicalis, which; whether it be conſider'd as cut aſunder, tied up with a thread, and neceſſarily bringing on ſome contraction in the vena portarum into which it is continued; or as depriv'd of the blood which returns from the placenta, and not aſſiſting, by this uſeful additamentum, the other part which is carried through itſelf, and is perhaps thicken'd from the new kind of aliment; may, in either or both ways, retard the ſecretion of bile in the liver; till this viſcus, upon the ceaſing of that contraction, becomes, by degrees, accuſtom'd to its new mode of action, and is again fit for the ſeparation of the bile.

However theſe things, as you ſee plainly, depend upon conjecture alone.

61. But there are other things which may be confirm'd by the diſſection of infants. I remember to have read, among the remarks made by Cowper, in his Appendix to the Anatomy of the Human Body, that they in whom he found the paſſages I have ſpoken of above *(f)*; that of the tubulus arterioſus, and of the foramen ovale in particular; to be ſhut up too early in life, had been frequently afflicted with a great number of diſorders, ſuch as inflammations of the head, neck and lungs.

Wherefore, when theſe diſorders attack new-born infants without any previous manifeſt cauſe, it will not be abſur'd and unreaſonable to ſuſpect that too haſty occluſion.

And as in this caſe he recommends a diminution of the blood; ſo you may, at leaſt, recommend the giving of milk more ſparingly, and preſcribe ſuch things to the nurſe, as will generate a more thin and fluxile milk.

For, by theſe means, the blood; which is, in its whole quantity, carried through the lungs, and ruſhes into the ſuperior branches of the great artery, in ſo much a greater quantity in proportion, as it is carried down in leſs quantity into the deſcending trunk thereof; will paſs more eaſily, and will do leſs hurt to the lungs, and the brain: from the injury of which perhaps, as being at that time very ſoft, other diſorders, beſides theſe inflammations, ariſe in the genus nervoſum by which thoſe new-born infants are frequently and ſuddenly deſtroy'd; and in particular thoſe, in whom, beſides thoſe premature occluſions, there is already a more copious or denſe blood from the uterus; and the veſſels of the brain are even much more infirm, than they generally are.

And as ſome may be born with ſuch a vitiated ſtructure, that thoſe paſſages of the blood, of which we have ſpoken, may be ſhut up too ſoon; ſo, on the contrary, it is reaſonable to ſuppoſe that ſome are born, in whom there is an oppoſite diſorder; and thoſe paſſages, for that reaſon, are not only never wholly ſhut up; which has been met with by me and others frequently in the foramen ovale; but are not even diminiſh'd: and this you may ſuppoſe ſaid of the ſame foramen ovale alſo.

(f) N. 59.

And

And if ſome bodies are, perhaps, ſo form'd that they can bear theſe inconveniences without falling into diſeaſe, it is not, however, improbable, but there are many more which cannot.

To this ſubject relates a letter which was written to me on the eighteenth of May, in the year 1722, by the celebrated Jano Planci. For he inquir'd of me whether I had ever found the foramen ovale, in new-born infants, quite unfurniſh'd with any valve.

The reaſon of his inquiry was, that, in an infant lately diſſected, both he, and a gentleman whom I have before ſpoken in commendation of; who then liv'd at Rimini, and who was afterwards firſt phyſician to the pope; I mean Anthony Leprotti, had ſought after this valve with accuracy, but in vain.

And the ſummary of his whole obſervation, as far as I have collected it from theſe, and the preceding letters of Planci, deſerves well to have a place in this epiſtle.

62. An infant, who had not been born more than fifteen days, was carried off from the ſtate of the living; but by what kind of diſorder is not certain.

On examining the body, the ſtomach was found full of good milk; and this viſcus, and all the others, appear'd to be ſound; except that the heart, and the veſſels which are about it, were diſtended with blood in a ſurprizing manner.

Thoſe parts of the umbilical veſſels that are in the belly, and the tubulus arterioſus, were open: and the foramen ovale was not only open, but was entirely without its valve; ſo that not the leaſt traces, or remains, of it appear'd, with whatever diligence you ſought after it.

63. And as I wrote back to Planci, that this appearance was entirely preternatural, he naturally fell into that way of thinking, which I juſt now ſpoke of. And you certainly perceive, that where that part which the blood urges on the left ſide; and impells, if not to ſhut up the foramen ovale more and more, at leaſt to cover it in ſome meaſure; is wanting, that certain motion of the blood, which is requir'd in breathing animals, muſt be perverted in the principal organ: and if this perverſion, or perturbation, be not diminiſh'd, but continue to be ſtill the ſame, the motion of the heart, and blood, muſt, at length, be quite ſuffocated.

64. You ſee, how very wide, and, at the ſame time, an almoſt unbeaten track, lies open to inveſtigate the diſeaſes of new-born infants, I mean by an attentive and accurate obſervation in diſſection after death, as well as while they are living, if the fooliſh love of parents did not withſtand.

Yet theſe very parents, having loſt all their infants, one after another, in the ſame manner, at length offer to the phyſicians, of their own accord, what they had denied before; in order to try if it be poſſible to preſerve thoſe that may be born hereafter.

However, they frequently light on thoſe who are either unſkill'd in anatomy, or deſpiſers of it; both of which inſtances I formerly ſaw in one and the ſame caſe. They who diſſected the new-born infants, reported as their fatal diſeaſe, that appearance which is, in them, quite natural; I mean the dura mater adhering very cloſely to the cranium. They who were conſulted, ſhow'd how much they had ſlighted anatomy, by admitting of this report, and

and conſidering that very adheſion as the foundation of what they were to anſwer.

Yet if a diligent ſtudy of anatomy brought with it no utility beſides this; that from the internal conſtitution of bodies, which are in a natural ſtate, we might learn what things are natural and what præternatural, in inquiring after the cauſes of diſeaſes; it certainly ought to be highly eſteem'd, inſtead of being deſpis'd.

But the bodies of tender infants have many peculiarities, beſides thoſe which I have taken notice of above: ſo that whoever would wiſh to enquire into their latent diſeaſes, to detect thoſe appearances that are really morbid, and compare them with the ſymptoms which he obſerv'd in the children while living; and after that, according to the nature, and degree, of both, bring ſome alleviation if not a cure, or, if it is impoſſible to do this, at leaſt to make a prediction, and confirm it by an explanation agreeable to what anatomy may teach him, ought to be exercis'd in diſſections of theſe bodies.

Of a prediction thus explain'd; not to digreſs far from the cranium which we have already mention'd; there is an example in a fatal ſign, which is, in other reſpects, not unknown, in the writings of Wepfer (*g*).

For, when the death of infants is at hand, I have not only ſeen evident, and profound, ſulci, about the lambdoidal and ſagittal ſutures; but alſo a ſubſiding little pit near to the conjunction of the coronary and ſagittal ſutures.

Why ſo? Becauſe the brain is then collaps'd into itſelf; and by ſubſiding draws inwards, by means of the connections of the dura mater, whatever of a membranous nature ſtill remains in the interſtices of the ſutures; and conſequently produces thoſe furrows, and this pit, or cavity.

65. But it will be proper, before any diligent man attempts theſe things in new-born infants, to collect all the more accurate obſervations, and diſſections, that have been made by phyſicians, and anatomiſts, upon infants more advanc'd, and upon children; for they are not extant even in the Sepulchretum, unleſs in a ſcatter'd ſtate; and out of theſe, to attend principally to thoſe which relate to the ſtructures proper to that age; or to the remains of thoſe ſtructures, which particularly occur in new-born infants, and are ſometimes larger than is commonly ſuppos'd.

Then let him afterwards add the obſervations which relate to theſe new-born infants, as many as ever he can collect of himſelf, or obtain from others ſimilar to his own; and let him make one body of them all; which ſhould begin with the infants that are the moſt advanc'd, and end with thoſe that are lately born: for the former may, ſometimes, by their imperfect words, or their little hands, make ſome diſcoveries, which (if you remark with what other ſymptoms, that naturally offer themſelves, they are join'd) will frequently aſſiſt your conjectures, at the time when you happen to find theſe other ſymptoms, in thoſe who have it not in their power to convey any meaning by their tongues, or by their geſtures.

I confeſs I had a great deſire to undertake this part of medical knowledge; but the power was wanting. For although I might have been at liberty to

(*g*) Exercit. de loc. aff. in apopl.

obſerve ſick infants with ſome accuracy when living, yet it would not have been in my power to have diſſected them after death. And the former, without the latter, would avail little to the purpoſe.

You will therefore expect theſe things from others: and from me you may ſtill expect other letters, in relation to thoſe diſeaſes, where I had not only an opportunity of obſerving in the living ſubjects, but of diſſecting them after death. In the mean while farewell.

END OF BOOK III.